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A REVIEW OF THE NORTH AMERICAN MOTHS OF THE FAMILY WALSHIIDAE (LEPIDOPTERA: GELECHIOIDEA)

By RONALD W. HODGES

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A REVIEW OF THE NORTH AMERICAN MOTHS OF THE FAMILY WALSHIIDAE (LEPIDOPTERA: GELECHIOIDEA)

By Ronald W. Hodges[1]

Introduction

Since most species of Walshiidae are small, inconspicuous moths, many collectors understandably have overlooked them. As a result, a relatively small number of specimens has been taken and our knowledge of the group is limited. Until extensive and intensive collecting has been accomplished, the results of any revisionary study will be limited, subject to reinvestigation. The purpose of this paper is to make known the described genera and species, to attempt to define the genera, and to describe the new species that are at hand. Four North American genera recently have been revised: *Walshia* Clemens (Hodges, 1961), *Ithome* Chambers (Hodges, 1962a), *Periploca* Braun (Hodges, 1962b), and *Perimede* Chambers (Hodges, in press). They will not be discussed further in this paper except for a few notes under "Taxonomic Treatment."

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At present not much is known about the immature stages of most species of Walshiidae; however, some general statements can be made. The known larvae of *Ithome* feed on the florets of species of Leguminosae and Polygonaceae. The larvae of *Walshia miscecolorella* (Chambers) and *W. amorphella* Clemens are stem and root borers; *W. miscecolorella* has been reared from several species of Leguminosae and is potentially a pest of sweet clover in parts of Texas. The larvae of *W. amorphella* are gall formers on the stems of *Amorpha fruticosa* L. and occasionally on *Hydrangea* spp. The known larvae of species of *Aeaea* Chambers are leaf miners in *Ostrya virginiana* (Mill.) K. Koch., *Quercus* spp., and *Rhynchosia tomentosa* (L.) H. & A. Species of *Periploca* (Braun) are known from *Ceanothus* spp. (gall formers on the stems), *Gleditsia* spp., and *Robinia* spp. (borers in the thorns), *Juniperus* spp. (found in the fruits), *Gymnosporangium* spp. (in galls and as a twig girdler). Two species, *Periploca laeta* Hodges and *P. nigra* Hodges, sometimes are pests of ornamental junipers. *Perimede erransella* Chambers has been reared from *Taxodium* spp. and leaves of *Ulmus* spp., but whether this species is a miner during all or part of the larval stage or whether it is an external feeder is not known. *Obithome punctiferella* (Busck) has been found in cages which contained cotton bolls, but whether the larva feeds on the bolls or is a scavenger is unknown. The larvae of *Stilbosis tesquella* Clemens are external feeders on *Amphicarpa* spp. and *Lespedeza* spp. The larvae of *Chrysopeleia purpuriella* Chambers have been reared from the leaves of *Robinia pseudo-acacia* L., but the exact habits are not known. *Sorhagenia rhamniella* (Zeller) and *S. nimbosa* (Braun) are leaf folders on *Rhamnus* spp. in the larval stage.

Because the species of *Aeaea* Chambers have similar maculation and habitus, it was necessary to make genitalic preparations of each specimen. In some of the female abdomens, single larval head capsules were found. During the process of cleaning the specimens, the head capsules were often removed; but they are present on two slides (RWH slides 1167 and 2121), *Aeaea* "d" and *Synploca gumia*, new genus and species, respectively. These head capsules indicate that the species possibly are ovoviviparous, a condition known to occur in the Coleophoridae (Toll, 1952), Tineidae (Diakonoff, 1952), and Oecophoridae (teste Clarke).

I wish to thank the following individuals for providing me with the specimens which form the basis of this study (parentheses enclose abbreviations used in citing the location of specimens): Mr. J. A. G. Rehn, Academy of Natural Sciences, Philadelphia (ANSP); Dr. C. D. MacNeill, California Academy of Sciences (CAS); Dr. J. G. Franclemont, Cornell University (CU); Mr. L. M. Martin, Los Angeles County Museum (LACM); Drs. P. J. Darlington and

H. E. Evans, Museum of Comparative Zoology (MCZ); Dr. J. A. Powell, University of California at Berkeley (UCB); Dr. A. F. Braun, Cincinnati, Ohio (AFB); Mr. M. O. Glenn, Henry, Illinois (MOG); Mr. C. P. Kimball, Barnstable, Massachusetts (CPK); and Dr. A. B. Klots, New York, New York (ABK). Specimens in the United States National Museum are designated by USNM. Particular thanks are given to Drs. Braun, Darlington, Evans, and Mr. Rehn for allowing me to examine type specimens under their care. In addition, Mr. J. D. Bradley furnished me with specimens of *Sorhagenia rhamniella* and *Cholotis semnostola* Meyrick and compared North American material with specimens in the British Museum (Natural History).

The photographs of the adult moths were made by J. Scott, Staff Photographer, Smithsonian Institution.

The specimens of *Stilbosis tesquella* from Highlands, North Carolina, were collected during the summer of 1958 when the author was assisting Dr. J. G. Franclemont under the auspices of a grant from the Penrose Fund of the American Philosophical Society.

Taxonomic Treatment

The name Walshiidae was proposed for a relatively homogeneous group of genera (Hodges, 1962a). At some future date, when more is known about the gelechioids, the group probably will be treated as a subfamily or tribe within the complex, but for the present it must be recognized as being as distinct as several other families.

The characters of the family are as given in Hodges (Revision of Cosmopterigidae, in press) with the following modifications: the forewing with 11 (no. 2 absent) or 12 veins; the hind wing with 6 (3 and 4 absent) or 8 veins; uncus usually present, absent in *Obithome*, new genus, and *Periploca*. In several of the genera there is a tendency toward asymmetry in the male genitalia, usually expressed by a twisting of the valvae with a concomitant reduction of one valva and an enlargement of the other.

The three families, Walshiidae, Cosmopterigidae, and Momphidae, have been placed in either Cosmopterigidae, Lavernidae, or Momphidae on the basis of wing venation; however, as I have indicated (Hodges, ibid.), venation does not offer a satisfactory means of separating these families. For example, by using venation, several genera of cosmopterigids would go into the Oecophoridae; the walshiids, cosmopterigids, and momphids would form a unit; and the Scaeosophidae would be treated as a separate family. Unfortunately, the female genitalia also do not seem to offer diagnostic characters on the family (and often not on the generic) level; however, the male genitalia do present what appear to be reliable means for separating these families, and it is this system of characters which presently

forms the basis of our system of classification. The females will have to be associated with males before positive family identification can be made.

Key to Walshiidae, Cosmopterigidae, and Momphidae Based on Male Genitalia

1. Gnathos present 2
   Gnathos absent 3
2. Brachia of gnathos symmetrical . . . . . MOMPHIDAE
   Brachia of gnathos asymmetrical . . . . . COSMOPTERIGIDAE
3. Aedeagus ankylosed, heavily sclerotized manica articulating with saccus or juxta . . . . . WALSHIIDAE
   Aedeagus not ankylosed, manica absent . . . . . MOMPHIDAE

The female genitalia of *Ithome* Chambers and *Obithome* are heavily sclerotized, particularly the apophyses. The apophyses are very similar to those of *Adela* Latreille (Pierce and Metcalf, 1935), *Ectroproceros* Diakonoff (Diakonoff, 1955), and *Antispila* Hübner (Kuroko, 1961); however, rather than indicating phyletic relationship, the sclerotization probably represents a modification for a specialized type of oviposition.

Meyrick (1915) transferred *Stagmatophora ceanothiella* Cosens to the Australian genus *Cholotis* Meyrick. In 1921 he synonymized *Cholotis* with the Palearctic genus *Ascalenia* Wocke, thereby making the combination *Ascalenia ceanothiella*. As I have shown (Hodges, 1962b), *A. ceanothiella* belongs to the genus *Periploca*. Genitalic examination of the type-species *Cholotis semnostola* indicates that this genus is distinct from *Ascalenia* and that it has affinities with *Perimede*. Meyrick placed many Central and South American species in *Cholotis* (later *Ascalenia*) and *Prochola* Meyrick. Clarke (in press) subsequently has examined the genitalia of several of Meyrick's type specimens and has transferred many species to other genera. Until the genitalia of the known species in these genera have been examined, the generic combinations must be regarded with caution.

Walshia particornella (Busck) is somewhat intermediate in position between *Walshia* and *Periploca;* however, because of an uncus present in the male genitalia and the general facies of the genitalia, *particornella* is associated with *Walshia*. The ostium bursae of *W. particornella* is in the middle of the seventh sternum, a characteristic that is in contrast to the other known species of Walshia, the ostium bursae of which is on the anterior margin of the seventh sternum; the ostium bursae of *Periploca* is on the anterior margin or medial. The habitus of *W. particornella* is similar to that of *Periploca* species, and the wings are smooth-scaled; the forewings of all known species of *Walshia* have a series of raised scales. At the time of writing I do not feel that

W. particornella is sufficiently distinct to allow me to propose a new genus for it, I am not really satisfied to place it in either *Periploca* or *Walshia*, and I do not think that *Walshia* and *Periploca* should be synonymized; therefore, my alternative is the arbitrary one of retaining *particornella* in *Walshia*.

A season of collecting on the southern part of the Colorado Plateau (Coconino Plateau) showed the following distributional information: no specimens of *Perimede* or *Ithome* were taken, less than 20 specimens of *Periploca* were collected, and one species of *Walshia*, *W. miscecolorella*, commonly was collected. With the exception of *Stilbosis tesquella* and *Aeaea stipator*, new species, which were taken in areas that are tongues of the Sonoran Desert extending onto the southern edge of the Cococino Plateau, none of the species treated in this paper were collected during the same period. The conclusion can be drawn, therefore, that the family is restricted to a warmer climate than is present in the Flagstaff area. Further collecting must be done before any generalized statement on the distribution of the family can be made.

Key to the North American Genera of Walshiidae

1. Raised scales present on forewing 2
   No raised scales on forewing 7
2. Hind wing with 6 and 7 stalked or connate 4
   Hind wing with 6 and 7 separate 3
3. Uncus stout, heavily sclerotized (fig. 17) . . . . **Nepotula,** new genus
   Uncus slight, lightly sclerotized . . . . . **Walshia** Clemens (in part)
4. Valvae reduced, patches of modified scales on eighth sternum (figs. 25 and 25b) . . . . . **Chrysopeleia** Chambers
   Valvae not reduced, no modified scales on eighth sternum 5
5. Saccular margin of male genitalia heavily sclerotized. . **Stilbosis** Clemens
   Saccular margin of male genitalia not heavily sclerotized 6
6. Uncus reduced, appearing as a small lobe, juxta(?) present, aedeagus reduced (fig. 20) . . . . . **Sorhagenia** Spuler
   Uncus normal, long; juxta absent; aedeagus moderate to large (fig. 30). **Aeaea** Chambers
7. Glandular structures associated with male genitalia . . **Perimede** Chambers
   No glandular structures associated with male genitalia 8
8. Uncus present 10
   Uncus absent 9
9. Valvae reduced, eighth segment of abdomen with lateral valva-like extensions (fig. 18) . . . . . **Obithome,** new genus
   Valvae not reduced, no valva-like processes on eighth abdominal segment. **Periploca** Braun
10. Hind wing with 6 and 7 stalked 11
    Hind wing with 6 and 7 separate . . . . . **Walshia** Clemens (in part)
11. Uncus heavily sclerotized, somewhat off center (fig. 19). **Neoploca,** new genus
    Uncus moderately sclerotized, arising from center of margin of tegumen . 12

12. Aedeagus slender, length more than six times width; valvae, often with basal processes . . . . . **Ithome** Chambers
Aedeagus stout, length not more than four times width; valvae without basal processes (fig. 24) . . . . . **Synploca,** new genus

Neoploca, new genus

FIGURES 7, 11, 59

Type-species: *Neoploca corusca* Hodges, new species.

Head: smooth-scaled; labial palpus recurved, reaching beyond vertex, third segment shorter than second, apex acute; maxillary palpus folded over base of tongue; eye emarginate on anterodorsal angle; ocellus visible; antenna simple, ciliate, two-thirds length of forewing, pecten absent. Forewing: lanceolate; 12 veins present; 1b furcate basally; 2 developed toward margin of wing; 3, 4, and 5 separate, 3 from angle of cell; 6, 7, and 8 stalked, 7 out of 6 at nearly five-sixths; cell open. Hind wing: lanceolate; cell open; 8 veins present; 1b simple; 2, 3, 4, and 5 almost equidistant; 6 and 7 stalked, diverging at three-fourths, each ending at seven-eighths. Metathoracic tibia with long scales on dorsal surface. Male genitalia: vinculum narrow; tegumen relatively broad; valvae symmetrical, no free parts, setae abundant toward apex and on costal margin; uncus heavily sclerotized, somewhat asymmetrical; aedeagus loosely helical, no cornuti present. Female genitalia: ostium bursae slightly beyond middle of seventh sternum, trapezoidal sclerotized area preceding ostium bursae; ductus bursae and corpus bursae lightly sclerotized, ductus bursae coiled before inception of bursa copulatrix; two spine-shaped signa present.

Neoploca is closest to *Periploca,* but differs from it in having a well-developed uncus and a relatively broad tegumen.

Neoploca corusca, new species

FIGURES 19, 37, 59

Head: pale, shining gold; thorax and forewing shining bronze-black; cilia shining fuscous; hind wing somewhat shining fuscous, cilia fuscous. Metathoracic leg shining gold or lead colored, apex of femur and tibia shining white; base and apex of first tarsal segment shining white, apex of second segment shining white on external surface, remaining segments unicolorous, ventral surface of first four tarsal segments shining white. Abdomen: apices of segments white with purple reflections, some shining ochreous-brown on segments. Male genitalia: as in figure 19 (RWH slide 2122). Female genitalia: as in figure 37 (RWH slide 532). Alar expanse: 9–12 mm.

Holotype: ♂, Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., July 14, 1959, R. W. Hodges (RWH slide 2123), Cornell Univ. type 3889.

Paratypes: same locality as type, 1 ♀, Aug. 23, 1959 (RWH slide 532), USNM; Peña Blanca Canyon, 4000 feet, Santa Cruz Co., Ariz., 3 ♂, 2 ♀, Aug. 8–11, 1959, R. W. Hodges (RWH slides 531, 2122; RWH wing slide 11), CU, USNM.

Superficially, *N. corusca* is somewhat similar to *Periploca ceanothiella* and *P. gleditschiaeella*, but it differs in having the scales of the forewings unicolorous and in having a well-developed uncus.

Synploca, new genus

FIGURES 8, 14, 60

Type-species: *Synploca gumia*, new species.

Head: smooth-scaled; labial palpus recurved, almost reaching vertex, second and third segments subequal in length, apex of third segment acute; tongue scaled basally; maxillary palpus folded over base of tongue; antenna three-fifths length of forewing, pecten absent; ocellus visible; anterodorsal margin of eye emarginate. Forewing: lanceolate; 12 veins present; cell closed or nearly closed; 1b furcate basally; 2 from six-sevenths of cell; 3 and 4 distant basally; 4 and 5 approximate basally; 6, 7, and 8 stalked; 9 from end of cell. Hind wing: 8 veins present; 1 simple; 2, 3, and 4 equidistant basally; 6 and 7 stalked, 6 out of 7 slightly beyond two-thirds length of wing. Metathoracic tibia with long scales dorsally. Male genitalia: valva relatively broad, apex rounded, costal and saccular areas not free; aedeagus stout, tapering rapidly to apex; uncus short, bifid. Female genitalia: ostium bursae near base of seventh sternum; sclerotized pregenital plate attaining edge of seventh sternum; ductus bursae and bursa copulatrix lightly sclerotized; two semicircular signa present, each signum with interiorly projecting extension from broadest point.

Synploca gumia, new species

FIGURES 24, 38, 60

Labial palpus bronze-black, pale basally; white dot at apex of second segment ventrally and 11 or 12 white dots forming row on ventral and anterior surface of third segment; apex white. Base of tongue and face shining pale silver-gold with purple reflections; antenna bronze-black, apical nine or ten segments ochreous; vertex of head, thorax, and forewing bronze-black; cilia of forewing and hind wing pale ochreous; abdomen shining pale ocher. Legs pale

bronze-black on outer surface, apices of tarsal segments white. Male genitalia: as in figure 24 (RWH slide 564). Female genitalia: as in figure 38 (RWH slide 571). Alar expanse: 6–9 mm.

Holotype: ♂, Madera Canyon, 4400 feet, Santa Rita Mts., Ariz., Oct. 10, 1959, R. W. Hodges (RWH slide 564), Cornell Univ. type 3888.

Paratypes: same locality as type, 2 ♂, Oct. 26, 1959 (RWH slide 2120), CU, USNM; same locality as type except for elevation, 4880 feet, 21 ♂, 22 ♀, June 30–Nov. 1, 1959 (RWH slides 570, 571, 2121), CU, USNM, BMNH, CNC; same locality as type except for elevation, 5600 feet, 1 ♂, 2 ♀, Sept. 22–Oct. 15, 1959, CU, USNM.

Nepotula, new genus

FIGURES 2, 16, 61

Type-species: *Nepotula secura* Hodges, new species.

Head: smooth-scaled; labial palpus almost attaining vertex, third segment shorter than second, apex acute; tongue moderate; maxillary palpus folded over base of tongue; antenna two-thirds length of forewing, simple, ciliate, pecten absent (one specimen examined, possibly deciduous). Forewing: broadly lanceolate, apex acute; 12 veins present; 1b furcate basally; 2 extremely faint basally; 4, 5, and 6 equidistant basally; 7 and 8 stalked. Hind wing: lanceolate, apex acute; 8 veins present; 6 and 7 separate. Male genitalia: valva sublinear, costal area a broad fold; vinculum narrow; tegumen relatively broad; uncus present, short, heavily sclerotized; a lightly sclerotized area on under surface of tuba analis. Female genitalia: not known.

Nepotula is closest to *Walshia* but differs from the latter in having a heavily sclerotized uncus and a relatively broad tegumen.

Nepotula secura, new species

FIGURES 17, 61

Labial palpus, tongue, maxillary palpus, head, and thorax covered with scales which are buff basally and apically, brown-black medially; apices of second and third segments of labial palpus buff-white; undersurface of scape of antenna buff, upper surface and shaft brown-black. Forewing: brown-black along costal margin, becoming pale apically; fascia of brown-black scales at one-fourth from costa to fold, continued beyond fold as series of raised scales; basal one-half of wing uneven tawny-buff becoming paler apically and gradually merging with pale brown-black of apex; three patches of brown-black raised scales at one-half, two costad of fold, and one from fold to dorsal margin; series of patches of brown-black raised scales along

costal and dorsal margins of wing starting between two-thirds and three-fourths; brown-black spot in middle of wing above end of fold; cilia pale fuscous-buff basally, fuscous apically. Hind wing: fuscous. Metathoracic leg: femur buff on dorsal third, brown-black on basal two-thirds; tibia and tarsus brown-black; white at middle and apex of tibia and apices of first two tarsal segments; apices of last three tarsal segments dark buff. Male genitalia: as in figure 17 (RWH slide 2003); apex of valva with curved dorsal extension; connection of aedeagus with tegumen short. Female genitalia: not known. Alar expanse: 16 mm.

Holotype: ♂, Pensacola, Fla., Oct. 28, 1961, Shirley Hills (RWH slide 2003, RWH wing slide 44), USNM type 66354.

Aeaea Chambers

FIGURES 6, 12, 62

Aeaea Chambers, 1874, Canadian Ent., vol. 6, p. 73; 1878, Bull. U.S. Geol. Geogr. Surv. Terr., vol. 4, p. 128; 1880, Journ. Cincinnati Soc. Nat. Hist., vol. 2, pp. 186, 199, 204.—Riley, *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 108 (as synonym of *Chrysopeleia*).—Dyar, 1902 [1903], U.S. Nat. Mus. Bull. 52, p. 540 (as synonym of *Chrysopeleia*).—Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem., no. 68, p. 329 (as synonym of *Chrysopeleia*).—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 6 (as synonym of *Chrysopeleia*).

Amaurogramma Braun, 1919, Ent. News, vol. 30, p. 261 (type-species: *Amaurogramma extensa* Braun, 1919, original designation).—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 11.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 63. New synonymy.

Type-species: *Aeaea ostryaeella* Chambers, 1874, monobasic.

Head: smooth-scaled; labial palpus recurved, smooth-scaled, third segment shorter than second; tongue moderate, scaled for short distance basally; maxillary palpus folded over base of tongue; ocelli present; eye emarginate dorsoanteriorly; antenna three-fifths length of forewing, simple, pecten present, length of scape slightly more than twice width. Forewing: lanceolate, apex rounded or acute; patches of raised scales present; cell open or closed; 11 or 12 veins present; 1b furcate basally, dorsal branch weak, 1c absent; 2 usually absent, sometimes present at margin; 3, 4, and 5 separate, except in *A. extensa;* 7 and 8 out of 6; 11 from beyond middle of cell. Hind wing: linear, apex acute; 5 to 8 veins present; 1 simple or absent; 3, 4, and 5 absent in *rhynchosiae;* 6 out of 7 at three-fourths to four-fifths; 7 to costa, apex in *rhynchosiae.* Metathoracic tibia with long scales dorsally. Male genitalia: symmetrical to asymmetrical; valva usually with separate costal and saccular areas; aedeagus smooth or with linear grooves; tegumen narrow; uncus simple or bifurcate. Female genitalia: usually two signa present; bursa copulatrix and

ductus bursae often with minute spines; seventh sternum often modified around ostium bursae, sometimes with patches of broad scales.

The various types of male genitalia at first seem to be unrelated; however, by starting with *Aeaea ostryaeella* as a model, it is possible to derive the others by reduction or by twisting of parts. Venational differences are very slight or nonexistent, and they are not correlated with the genitalic types. Also, the habitus of each is very similar to that of the others. *Aeaea extensa*, the type-species of *Amaurogramma*, has asymmetrical and twisted male genitalia. When I knew only *A. ostryaeella* and *A. extensa*, the two were sufficiently distinct to be considered as separate genera, but the evidence presented by the other species indicates that they are congeneric.

I have not been able to associate the sexes in several instances, with the result that names are applied to the males and letters to the unassociated females. There are 12 males and 13 females, but no female of the eastern species *A. venifica* is known; thus, two of the females from the Southwest represent undescribed species. Until the sexes are correlated, it seems reasonable to withhold naming species on the basis of the female sex. The species for which the sexes have been correlated are *A. victor*, new species, *A. ostryaeella*, *A. rhynchosiae*, new species, *A. dulcedo*, new species, *A. extensa*, *A. quadricustatella*, and A. *stipator*, new species. Of these, the first three were associated on the basis of specimens reared from the same food plant at the same time; the others were associated on the basis of locality. It is possible that some of the latter are not correct.

Venation does not seem to offer a criterion for separating all the species. *A. extensa* has 3 and 4 of the forewing stalked, a condition which does not occur elsewhere. In one instance a male and a female have the same venation; however, the maculation of the two sexes is quite distinct. It is possible that some of the species are sexually dimorphic.

An attempt to write a key based on maculation was made, but it was not satisfactory because variation of the maculation within a species, as defined by genitalic characters, is greater than the supposed differences used in the key.

Key to North American Species of *Aeaea*

MALES

1. Uncus simple 2
   Uncus bifurcate 10
2. Valva simple . . . . . **A. dulcedo**, new species
   Valva bifurcate at apex or divided into lobes 3

3. Apex of valva bifurcate . . . . . **A. venifica,** new species
   Valva divided into lobes 4
4. Costa separate from valva, directed dorsally; remainder of valva entire. **A. juvantis,** new species
   Costa, if separate from valva, directed posteriorly; sacculus separate, at least apically 5
5. Valvae symmetrical 6
   Valvae asymmetrical . . . . . **A. extensa** (Braun)
6. Costa separate from valva (at least apex) 7
   Costa united with valva . . . . . **A. venatrix,** new species
7. Uncus tapering to apex 8
   Uncus expanded at apex . . . . . **A. stipator,** new species
8. Saccus with acute apex 9
   Saccus with rounded apex . . . . . **A. risor,** new species
9. Lobe extending from posterior part of costa; apex of valva acute (fig. 26). **A. ostryaecella** Chambers
   No lobe extending from costa; apex of valva rounded (fig. 57). **A. quadricustatella** Chambers
10. Each ramus of uncus bifid . . . . . **A. sagana,** new species
    Rami of uncus simple 11
11. Valvae symmetrical . . . . . **A. victor,** new species
    Valvae asymmetrical . . . . . **A. rhynchosiae,** new species

FEMALES

1. Ostium bursae preceded by narrow semicircular sclerotized band (fig. 54) . . . . . species "f"
   Ostium bursae not preceded by such a band 2
2. Ostium bursae near anterior margin of seventh sternum, seventh sternum heavily sclerotized from ostium bursae to anterior margin (figs. 52 and 55) 3
   Ostium bursae medial on seventh sternum, seventh sternum not heavily sclerotized from ostium bursae to anterior margin 4
3. Sclerotized band preceding ostium bursae with strong longitudinal line, placed to left of center (fig. 52) . . . . . species "b"
   Sclerotized band lacking longitudinal line (fig. 55) . . . . . species "e"
4. Ostium bursae preceded and succeeded by broad sclerotized plates (fig. 51) 5
   Ostium bursae not surrounded by broad plates 7
5. Series of lateral striae from level of ostium bursae to anterior margin of seventh sternum (fig. 47) . . . . . **A. rhynchosiae,** new species
   Without series of lateral striae 6
6. Lightly sclerotized flap extending beyond posterior margin of seventh sternum (fig. 51) . . . . . species "a"
   Lacking such a flap (fig. 49). . . . . **A. extensa** (Braun)
7. Ostium bursae at apex of conical projection on seventh sternum. species "d"
   No medial projection on seventh sternum 8
8. Posterior margin of seventh sternum emarginate medially (figs. 48 and 50) 9
   Posterior margin of seventh sternum not emarginate 10

9. Submedial sclerotized flap running from anterior to posterior margin of seventh sternum, narrower posteriorly (fig. 50) . . **A. victor,** new species
Without such a longitudinal structure; heavily sclerotized striate area from anterior margin of seventh sternum to middle (fig. 48).
A. dulcedo, new species
10. Narrow, sclerotized, Y-shaped band extending anteriorly from seventh sternum (fig. 56) . . . . . species "c"
Lacking such a band 11
11. Two submedial conical extensions of seventh sternum, extending from anterior margin almost to posterior margin (fig. 45).
A. ostryaecella Chambers
Lacking such extensions (fig. 46) 12
12. Seventh sternum with broad scales laterally; heavily sclerotized submedial area running posteriorly from anterior margin of seventh sternum to two-thirds, then angling and going to lateral margins (fig. 46).
A. stipator, new species
Seventh sternum without broad scales laterally; narrow, submedial sclerotized band running from ostium bursae to anterior margin of seventh sternum (fig. 58) . . . . . **A. quadricustatella** Chambers

Aeaea juvantis, new species

FIGURE 32

Head, thorax, legs, and forewings covered with dark gray scales, usually with apices pale gray, purplish reflections at some angles of light incidence. Forewing: patch of raised scales dorsad of fold at one-fourth, one on dorsal margin and one costad of fold slightly beyond middle, one costad of fold immediately before end of fold, and four or five small patches along margins before apex; costal and apical cilia with pale-gray tipped scales, dorsal cilia unicolorous. Hind wing: unicolorous, pale gray with cinereous cast. Metathoracic tibia buff at middle and apex, apices of tarsal segments buff. Male genitalia: as in figure 32 (RWH slide 1170); costa free from valva and directed dorsally, sacculus joined with valva. Female genitalia: female not associated with male. Alar expanse: 6–6.5 mm.

Holotype: ♂, Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., July 1, 1959, R. W. Hodges (RWH slide 1992), Cornell Univ. type 3883.

Paratypes: same locality as type, 5 ♂, July 1–9, 1959 (RWH slides 1170, 1993, 2019, 2021; RWH wing slide 19), CU, USNM.

Aeaea juvantis may be separated from *A. stellans*, *A. sagana*, *A. rhynchosiae*, and *A. extensa* by the symmetrical male genitalia; and from *A. dulcedo*, *A. venifica*, *A. venatrix*, *A. ostryaecella*, *A. stipator*, *A. risor*, and *A. victor* by the free costa which is directed dorsally and is slightly swollen apically.

***Aeaea dulcedo*, new species**

FIGURES 29, 48

Maculation: as in *A. juvantis*. Male genitalia: as in figure 29 (RWH slide 1042); valvae symmetrical, costal and saccular regions not separate; uncus simple. Female genitalia: as in figure 48 (RWH slide 1043); posterior margin of seventh sternum emarginate medially, ostium bursae at base of emargination. Alar expanse: 5 mm.

Holotype: ♂, Westwood Hills, Los Angeles Co., Calif., April 1941, R. M. Bohart (RWH slide 1042; RWH wing slide 26), collection of Annette F. Braun.

Paratype: same data as type, 1 ♀ (RWH slide 1043), collection of Annette F. Braun.

The male genitalia of *A. dulcedo* may be distinguished from those of the other known species of *Aeaea* by the presence of symmetrical and simple valvae.

***Aeaea venifica*, new species**

FIGURE 31

Maculation: as in *A. juvantis*. Male genitalia: as in figure 31 (RWH slide 10038); symmetrical, saccular area free from valva apically. Female genitalia: female not associated with male. Alar expanse: 6–7 mm.

Holotype: ♂, Putnam Co., Ill., June 26, 1957, M. O. Glenn (RWH slide 10028), USNM type 66325.

Paratypes: ILLINOIS: ♂, same locality as type, June 23, 1957 (RWH slide 10029), MOG; MARYLAND: Hyattsville, 1 ♂, 1907, Aug. Busck (RWH slide 10006; RWH wing slide 23), USNM; MASSACHUSETTS: Barnstable, 2 ♂, July 12, 26, 1958, C. P. Kimball (RWH slides 2043, 2044), CPK; NEW YORK: Ithaca, 1 ♂, June 16, 1930, A. B. Klots (RWH slide 10038), ABK; ONTARIO: Toronto, 1 ♂, June 1, 1930, H. S. Parish (RWH slide 46), CU.

The male of *A. venifica* may be separated from that of *A. dulcedo* by the free apical portion of the sacculus.

It is curious that no females of this species are known; however, as more material is collected, this sex should be taken.

***Aeaea venatrix*, new species**

FIGURE 28

Maculation: as in *A. juvantis*. Male genitalia: as in figure 28 (RWH slide 1961), valva deeply emarginate with saccular area free apically, costal area not free, vinculum produced anteriorly and

emarginate medially, uncus simple. Female genitalia: female not associated with male. Alar expanse: 5–7 mm.

Holotype: ♂, Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., July 17, 1959, R. W. Hodges (RWH slide 2022), Cornell Univ. type 3884.

Paratypes: same locality as type, 7 ♂, July 2–30, 1959 (RWH slides 1169, 1961, 1962, 1966, 1971, 1976, 1994; RWH wing slide 18), CU, USNM.

The males of *A. venatrix* may be separated from those of *A. ostryaeella* by the attached costal area of the valva.

Aeaea ostryaeella Chambers

FIGURES 26, 45

Aeaea ostryaeella Chambers, 1874, Canadian Ent., vol. 6, p. 74; 1878, Bull. U.S. Geol. Geogr. Surv. Terr., vol. 4, pp. 121, 128; 1880, Journ. Cincinnati Soc. Nat. Hist., vol. 2, p. 199.—Hagen, 1884, Papilio, vol. 4, p. 154.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 6.

Chrysopeleia ostryaeella, Riley, *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 108.—Dyar, 1902 [1903], U.S. Nat. Mus. Bull. 52, p. 540.—Kearfott, *in* Smith, 1903, Check list of the Lepidoptera of boreal America, p. 118.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152.—Heinrich, 1920, Proc. U.S. Nat. Mus., vol. 57, p. 71.—Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem., no. 68, p. 329.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 63.

Chambers' illustration of the venation of this species is quite misleading; however, when one considers the size of the moth and the degree of magnification available to him, it is easy to understand how an incorrect interpretation could have been made. A more accurate interpretation is given in figure 12.

Male genitalia: as in figure 26 (RWH slide 10027), valvae symmetrical, costa free, anterior margin of vinculum emarginate medially, uncus emarginate. Female genitalia: as in figure 45 (RWH slide 1162); seventh sternum with two heavily sclerotized areas starting anteromedially, running posteromedially, free from sternum apically; ostium bursae at center of seventh sternum. Alar expanse: 5–7 mm.

Food plant: *Ostrya virginiana* (Mill.) K. Koch. According to Chambers (1874), the larva mines the leaf between two veins, leaving a row of frass on each side of the mine.

Holotype: ♂, in Museum of Comparative Zoology.

Type locality: Kentucky.

Specimens examined: CONNECTICUT: Lyme, 2 ♂, reared from *Ostrya virginiana*, emerged June 9, 15, 1916, A. Busck (Carl Heinrich genitalia slide, June 27, 1917), USNM; ILLINOIS: Putnam County, 2 ♂, June 28, 1957, July 17, 1959, M. O. Glenn (RWH slides 2039 and 10027), MOG; KENTUCKY: no further locality given, 1 ♂, Chambers,

MCZ; MASSACHUSETTS: Barnstable, 2 ♂, July 25, 1958, C. P. Kimball (RWH slides 2041, 2042), CPK; OHIO: Cincinnati, 4 ♂, 5 ♀, Braun, rearing 164, emerged May 23–June 5, 1912, Annette F. Braun (RWH slides 1161, 1162; RWH wing slides 25, 36, 37; A.B. slides Oct. 10, 1930), USNM.

Aeaea quadricustatella Chambers

FIGURES 57, 58

Aeaea quadricustatella Chambers, 1880, Journ. Cincinnati Soc. Nat. Hist., vol. 2, p. 186.

Aeaea quadricristatella, Hagen, 1884, Papilio, vol. 4, p. 154.

Chrysopeleia quadricristatella, Riley, *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 108.—Dyar, 1902 [1903], U.S. Nat. Mus. Bull. 52, p. 540.—Kearfott, *in* Smith, 1903, Check list of the Lepidoptera of boreal America, p. 118.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152.

Amaurogramma quadricristatella, Braun, 1919, Ent. News, vol. 30, p. 262.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 63.

Maculation: as in *A. juvantis*. Male genitalia: as in figure 57 (RWH slide 872); valvae symmetrical, apex of valva a curved narrow lobe; costa free apically, lobate; apex of uncus acute. Female genitalia: as in figure 58 (RWH slide 659); ostium bursae encircled by sclerotized band, broader posteriorly; narrow sclerotized band on each side of ostium bursae running from anterior margin of seventh sternum to three-fifths.

Holotype: Museum of Comparative Zoology.

Type locality: Texas [Waco].

Specimens examined: FLORIDA: Siesta Key, Sarasota Co., 1 ♂, 1 ♀, June 1, 2, 1957, C. P. Kimball (RWH slides 649, 10041), CPK, USNM; TEXAS: Waco, 1 ♂, Belfrage (RWH slide 872), MCZ.

Aeaea stipator, new species

FIGURES 30, 46

Maculation: as in *A. juvantis*. Male genitalia: as in figure 30 (RWH slide 1972); costal and possibly saccular areas free apically, apex of costa directed medioventrally; apical margin of uncus rounded. Female genitalia: as in figure 46 (RWH slide 2032); lateral patch of broadened scales on each side of ostium bursae, patches extending from anterior margin to three-fourths; ostium bursae at three-fourths. Alar expanse: 7–7.5 mm.

Holotype: ♂, Vail Lake Road, 6500 feet, 9½ miles SE Flagstaff, Coconino Co., Ariz., July 11, 1961, Ronald W. Hodges (RWH slide 2028), USNM type 66326.

Paratypes: ARIZONA: same locality as type, 1 ♂, 2 ♀, July 11, 18, 1961 (RWH slides 2027, 2029, 2030; RWH wing slide 27), CU, USNM;

West Fork, 6500 feet, 16 miles SW Flagstaff, Coconino Co., 1♀, July 15, 1961, Ronald W. Hodges (RWH slide 2032), USNM; 4 miles ESE Pine, Gila Co., 5400 feet, 1 ♀, Sept. 1, 1961, Ronald W. Hodges (RWH slide 2031, RWH wing slide 35), USNM; Madera Canyon, 4880 feet, Santa Rita Mts., 1 ♂, July 9, 1959, R. W. Hodges (RWH slide 1972), CU.

The male of *A. stipator* may be separated from that of *A. ostryaeella* by the rounded apex of the uncus and by the lateral projections of the saccus having rounded apices. The female of *A. stipator* may be separated from that of *A. dulcedo* by having the posterior margin of the seventh sternum rounded, not emarginate; and from species "c" by having the ostium bursae at three-fourths, not one-third.

A female was associated with the male on the basis of six specimens taken in north-central Arizona during the season of 1961. These represent the only species of *Aeaea* taken during the summer, and it is hypothesized that both sexes are the same species.

Apparently, this species is restricted to the lower montaine elevations of Arizona because collecting at elevations of 7200 to 8500 feet failed to turn up any specimens. It is anticipated that future collecting will yield more information concerning the altitudinal and areal distribution of this and the other species of *Aeaea*.

Aeaea risor, new species

FIGURE 33

Maculation: largely same as in *A. juvantis;* perpendicular, white fascia formed of white-tipped scales at one-third, and oblique white fascia at two-thirds; bright patch of white-tipped scales dorsad of fold beyond base. Male genitalia: as in figure 33 (RWH slide 1166); saccular and costal areas free distally; aedeagus very broad, apex relatively blunt; uncus apparently absent; setae on base of costal area short. Female genitalia: none associated with this species. Alar expanse: 6.5 mm.

Holotype: ♂, Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., Sept. 24, 1959, R. W. Hodges (RWH slide 1166, RWH wing slide 28), Cornell Univ. type 3885.

The male of *A. risor* may be separated from the other species of *Aeaea* by the absence of the uncus, the broad aedeagus, and the distinctly bipartite vinculum.

Aeaea victor, new species

FIGURES 27, 27a, 27b, 50

Maculation: as in *A. juvantis*. Male genitalia: as in figures 27, 27a, 27b (J. F. G. Clarke slide 10226); saccular and costal areas free apically, uncus broadly bifid apically. Female genitalia: as in figure

50 (JFGC slide 10227); sclerotized area of seventh sternum divided medially, more heavily sclerotized medial border; ostium bursae between one-half and two-thirds. Alar expanse: 6.5–7 mm.

Food plant: *Quercus stellata* Wang. According to notes made by Heinrich and De Gryse, the larvae make a mine, starting near some rib in the leaf, usually the midrib. The mines are covered with frass on the outside.

Holotype: ♂, Cherrydale, Va., Sept. 22, 1922; "Comp. 13935," Hopkins, U.S. 13942g; from oak, A. Busck, C. P. Heinrich (JFGC slide 10226), USNM type 66327.

The male of *A. victor* may be separated from that of *A. risor* by the bifid apex of the uncus; from that of *A. sagana* by the symmetrical valvae. The female differs from that of *A. ostryaeella* by having the seventh sternum divided medially and by having the inner margins concave; in *A. ostryaeella* the inner margins of the processes are convex.

***Aeaea sagana*, new species**

FIGURE 34

Maculation: as in *A. juvantis*. Male genitalia: as in figure 34 (RWH slide 1991); valvae asymmetrical, apex of valva in loose coil; aedeagus curved; uncus bifid, apex of each ramus bifid. Female genitalia: none associated with this species. Alar expanse: 5.5–10 mm.

Holotype: ♂, Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., Sept. 24, 1959, R. W. Hodges (RWH slide 1171), Cornell Univ. type 3887.

Paratypes: same locality as type, 6 ♂, July 22–Oct. 18, 1959 (RWH slides 536, 585, 700, 1977, 1991, 2011; RWH wing slide 21), CU, USNM; same locality as type except for elevation, 5600 feet, 5 ♂, Sept. 21–Oct. 8, 1959 (RWH slides 700, 1967, 1981, 1982, 1987), CU, USNM.

The male of *A. sagana* may be separated from that of *A. rhynchosiae* by the apex of each ramus of the uncus being bifid.

***Aeaea rhynchosiae*, new species**

FIGURES 35, 35a, 35b, 47

Maculation: as in *A. juvantis*. Male genitalia: as in figures 35, 35a, and 35b (RWH slide 1038); valvae asymmetrical; costal and saccular areas free for much of length, narrow; aedeagus grooved, curved; uncus bifurcate apically. Female genitalia: as in figure 47 (RWH slide 1040); ductus bursae broad for most of length, becoming narrow before bursa copulatrix; ostium bursae at two-thirds on seventh sternum; two sclerotized plates apparently dividing ostium bursae. Alar expanse: 6–6.5 mm.

685-617—63——2

Food plant: *Rhynchosia tomentosa* (L.) H. and A. Dr. Braun (in litt.) gives the following notes on the mine and early stages: "Mine starts at midrib and extends outward toward margin; lateral vein usually forming boundary of lower side; upper side margin more irregular. Frass ejected at beginning of mine at midrib, collecting in a mass. Parenchyma all consumed. Larva apparently makes several mines as a large larva may be found in a very small mine. Parenchyma consumed over the whole mine. Many deserted mines, perhaps earlier mines large as well as small, often several on one leaf. Larva pale yellow, abdominal and thoracic legs present. Cocoon yellowish or whitish, tapering to a fine point at one end, blunt at the other end, convex and fuzzy."

Holotype: ♂, Chickasaw Forest, near Henderson, Chester Co., Tenn., Braun 1649, emerged July 30, 1938, A. F. Braun (RWH slide 1039), collection of Annette F. Braun.

Paratypes: same locality as holotype, 6 ♂, 9 ♀, emerged July 28–Aug. 2, 1938 (RWH slides 1038, 1040, 1041; RWH wing slide 24), AFB, USNM.

The male of *A. rhynchosiae* may be separated from that of *A. extensa* by the bifid apex of the uncus. The female may be separated from that of species "a" by the submedial striae on the seventh sternum.

***Aeaea extensa* (Braun), new combination**

FIGURES 36, 49

Amaurogramma extensa Braun, 1919, Ent. News, vol. 30, p. 262.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 6.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 63.

Maculation: as in *A. juvantis*. Male genitalia: as in figure 36 (RWH slide 1036); valvae asymmetrical; vinculum like two plates, saccal area of each plate projecting anteriorly and apex of each with short setae; uncus simple. Female genitalia: as in figure 49 (RWH slide 1037); ostium bursae on projecting plate, two sclerotized plates lying above and posteriorly of ostium bursae; heavily sclerotized line running anterolaterally from plates behind ostium bursae to costal margin of seventh sternum.

Holotype: in collection of Annette F. Braun.

Type locality: Loma Linda, California.

Specimens examined: CALIFORNIA: Antioch, Contra Costa Co., 1 ♂, 2 ♀, May 14, 1958; J. Powell (RWH slides 1150, 1151, 1152; RWH wing slide 22), UCB, USNM; Loma Linda, 1 ♂, 1 ♀, June 3, July 22 (RWH slides 1036, 1037), AFB; San Diego, 1 ♀, July 26, 1923 (RWH slide 10007), LACM.

Unnamed Species of *Aeaea*

The remaining females are those which have not been associated with males. As I have stated previously, at least two of them represent new species, but until reared material with associated adults is available, the best course is to illustrate the genitalia and to give alphabetic denotations to the specimens. Each has approximately the same habitus as *A. juvantis* except for "d," which is similar to *A. risor*. The specimens will be retained temporarily in the USNM.

Aeaea species a

FIGURE 51

Female genitalia: as in figure 51 (RWH slide 1164); ostium bursae at middle of seventh sternum; heavily sclerotized plate anterior to ostium bursae, slightly emarginate posteriorly; two heavily sclerotized plates posterior to ostium bursae; third plate posterior to ostium bursae with convex apex. Alar expanse: 9 mm.

Specimen examined: Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., 1 ♀, July 24, 1959, R. W. Hodges (RWH slide 1164, RWH wing slide 34).

Aeaea species b

FIGURE 52

Female genitalia: as in figure 52 (RWH slide 1172); ostium bursae at one-third on seventh sternum; heavily sclerotized plate anterior to and laterad of ostium bursae, well-defined line dividing medial and lateral sections of this plate. Alar expanse: 7–7.5 mm.

Specimens examined: Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., 3 ♀, Sept. 19–29, 1959, R. W. Hodges (RWH slides 1990, 2017, 2018; RWH wing slide 31); same locality except for elevation, 5600 feet, 1 ♀, Sept. 23, 1959 (RWH slide 1172).

Aeaea species c

FIGURES 56 and 62

Female genitalia: as in figure 56 (RWH slide 1965); ostium bursae at one-third; seventh sternum with broad scales arranged in semicircular patches beside ostium bursae; one signum visible. Alar expanse: 7–7.5 mm.

Specimens examined: Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., 4 ♀, July 10–27, 1959, R. W. Hodges (RWH slides 1965, 1974, 2023; RWH wing slide 33).

***Aeaea* species d**

FIGURE 53

Female genitalia: as in figure 53 (RWH slide 1167); ostium bursae approximately at two-thirds, heavily sclerotized collar immediately preceding ostium bursae around ductus bursae, ductus bursae heavily sclerotized until just before bursa copulatrix. Alar expanse: 6.5 mm.

Specimen examined: Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., 1 ♀, Aug. 3, 1959, R. W. Hodges (RWH slide 1167, RWH wing slide 30).

***Aeaea* species e**

FIGURE 55

Female genitalia: as in figure 55 (RWH slide 1963); ostium bursae at one-third; a heavily sclerotized plate extending from anterior margin of seventh sternum to ostium bursae; basal half of ductus bursae moderately heavily sclerotized. Alar expanse: 7–8.5 mm.

Specimens examined: Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., 5 ♀, Aug. 23–Oct. 24, 1959, R. W. Hodges (RWH slides 1165, 1963, 1988, 1995, 2010; RWH wing slide 32); same locality except for elevation, 5600 feet, 4 ♀, Sept. 24–Oct. 15, 1959 (RWH slides 701, 1975, 1980, 1985).

***Aeaea* species f**

FIGURE 54

Female genitalia: as in figure 54 (RWH slide 1968); ostium bursae at two-thirds; semicircular sclerotized area surrounding ostium bursae laterally and anteriorly, broader medially, narrow posteriorly; narrow, sinuous, submedial, sclerotized patch extending from anterior to posterior margin of seventh sternum. Alar expanse: 6.5–7.5 mm.

Specimens examined: Madera Canyon, 4880 feet, Santa Rita, Mts., Ariz., 23 ♀, July 2–Aug. 22, 1959, R. W. Hodges (RWH slides 1173, 1174, 1964, 1968, 1970, 1973, 1978, 1979, 1983, 1989, 1996–2000, 2007–2009, 2012–2016; RWH wing slide 29); same locality except for elevation, 5600 feet (RWH slide 2006).

Stilbosis Clemens

FIGURES 3, 13, 63

Stilbosis Clemens, 1860, Proc. Acad. Nat. Sci. Philadelphia, vol. 12, p. 170; *in* Stainton, 1872, The Tineina of North America, p. 129.—Chambers, 1874, Canadian Ent., vol. 6, p. 72; 1878, Bull. U.S. Geol. Geogr. Surv. Terr., vol. 4, p. 162.—Walsingham, 1882, Trans. Amer. Ent. Soc., Philadelphia, p. 197.—Riley, *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 107.—Dyar, 1902 [1903], U.S. Nat. Mus. Bull. 52, p. 539.—Busck, 1903, Proc. Ent. Soc. Washington, vol. 5, p. 202.—Kearfoot, *in* Smith, 1903, Check list of the Lepidoptera of boreal America, p. 117.—Walsingham, 1909, *in* Godman and Salvin, Biologia Centrali-Americana, vol. 42 (Lepidoptera-Heterocera,

vol. 4), p. 7.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152.—Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem., no. 68, p. 325.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 211.—Forbes, 1931, Journ. Dep. Agric. Porto Rico, vol. 4, p. 361.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 64.

Type-species: *Stilbosis tesquella* Clemens, 1860, monobasic.

Head: smooth-scaled; labial palpus recurved, third segment shorter than second; tongue scaled basally; maxillary palpus folded over base of tongue; eye notched at anterodorsal angle. All surfaces other than hind wings and cilia of forewings covered with metallic scales. Forewing with patches of raised scales; lanceolate; 12 veins present; 2 very weak basally; 6 very short out of 7 and 8; 11 from five-sevenths of cell. Hind wing: narrow lanceolate, 8 veins present. Male genitalia: symmetrical; saccular margin of valva free apically, heavily sclerotized, series of long, heavy setae at base of costa; uncus linear; aedeagus massive, apex acute. Female genitalia: ostium bursae large, surrounded by narrow sclerotized ring; ductus bursae and bursa copulatrix granulose; one or two signa present.

This genus probably has its center of distribution in Central or South America with only two species occurring north of Mexico. *S. tesquella* has been taken from New York to northern Arizona. *S. nubila* is known from the type locality in southern Arizona. Examination of the genitalia of the species of *Stilbosis*, which Walsingham (1909) recorded as *S. tesquella*, indicates that the specimens are neither *S. tesquella* nor *S. nubila*, new species.

Key to North American Species of *Stilbosis*

BASED ON VENATION

Vein 2 of forewing present only at margin . . . . . **S. nubila,** new species
Vein 2 of forewing visible from cell . . . . . **S. tesquella** Clemens

BASED ON MALE GENITALIA

Ventral margin of sacculus relatively straight (fig. 22) . . . **S. tesquella** Clemens
Ventral margin of sacculus sinuate (fig. 23) . . . . . **S. nubila,** new species

BASED ON FEMALE GENITALIA

Ostium bursae round, with lateral sclerotized projections (fig. 41).
S. tesquella Clemens
Ostium bursae somewhat triangular, without such lateral sclerotized extensions (fig. 40) . . . . . **S. nubila,** new species

Stilbosis tesquella Clemens

FIGURES 22, 22a, 41, 63

Stilbosis tesquella Clemens, 1860, Proc. Acad. Nat. Sci., Philadelphia, vol. 12, p. 170; *in* Stainton, 1872, The Tineina of North America, p. 129.—Walsingham, 1882, Trans. Amer. Ent. Soc., Philadelphia, p. 197.—Riley *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 107.—Dyar, 1902 [1903],

U.S. Nat. Mus. Bull. 52, p. 539.—Busck, 1903, Proc. Ent. Soc. Washington, vol. 5, p. 202.—Kearfott, *in* Smith, 1903, Check list of the Lepidoptera of boreal America, p. 117.—Walsingham, 1909, *in* Godman and Salvin, Biologia Centrali-Americana, vol. 42 (Lepidoptera-Heterocera, vol. 4), p. 7.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152.—Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem., no. 68, p. 325.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 211.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 64.

Stilbosis tesquatella, Chambers, 1878, Bull. U.S. Geol. Geogr. Surv. Terr., vol. 4, p. 162, misspelling.—Riley, *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 107 (as synonym of *S. tesquella*).—Walsingham, 1909, *in* Godman and Salvin, Biologia Centrali-Americana, vol. 42 (Lepidoptera-Heterocera, vol. 4), p. 8 (as synonym of *S. tesquella*).

Laverna(?) *quinquicristatella* Chambers, 1881, Journ. Cincinnati Soc. Nat. Hist., vol. 3, p. 293.

Laverna ? *quinquecristatella*, Walsingham, 1882, Trans. Amer. Ent. Soc., Philadelphia, p. 197 (correction of spelling; as synonym of *S. tesquella*).

Stilbosis quinque-cristatella, Riley, *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 107 (as synonym of *S. tesquella*).

Stilbosis quinquecristatella, Dyar, 1902 [1903], U.S. Nat. Mus. Bull. 52, p. 539 (as synonym of *S. tesquella*).—Walsingham, 1909, *in* Godman and Salvin, Biologia Centrali-Americana, vol. 42 (Lepidoptera-Heterocera, vol. 4), p. 8 (as synonym of *S. tesquella*).—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152 (as synonym of *S. tesquella*).—Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem., no. 68, p. 325 (as synonym of *S. tesquella*).—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 64 (as synonym of *S. tesquella*).

The male and female genitalia of this common and relatively well-known species are figured for the first time: Figures 22 and 22a (AB slide 14.XI.1930) and figure 41 (RWH slide 577).

Lectotype: *S. tesquella*, present designation, ♀, bearing following labels: "1. 88; 2. Type, *Stilbosis tesquella* B. Clemens, 7482; 3. *Stilbosis tesquella* Clemens, Type!, AB 1902." Academy of Natural Sciences, Philadelphia. *quinquicristatella*, lost.

Type localities: *S. tesquella*, Pennsylvania(?); *S. quinquicristatella*, Amherst, Massachusetts.

Food plant: *Amphicarpa bracteata* (L.) Fern. and *Lespedeza* spp. in the East.

Specimens examined: ARIZONA: Fort Valley, 7350 feet, 7½ miles NW Flagstaff, Coconino Co., 1 ♂, July 19, 1961, Ronald W. Hodges, USNM; Hart Prairie, 8500 feet, 10 miles NNW Flagstaff, Coconino Co., 2 ♂, July 1, 21, 1961, Ronald W. Hodges, USNM; West Fork, 6500 feet, 16 miles SW Flagstaff, Coconino Co., 63 ♂, 9 ♀, July 4–19, 1961, Ronald W. Hodges (RWH slides 1655, 1656; RWH wing slide 42), CU, USNM; KANSAS: Onaga, 3 ♀ (RWH slide 10008), MCZ. MARYLAND: Plummers Island, 4 ♂, May–July, A. Busck, R. C. Sherman, USNM; District of Columbia: 3 ♀, ex hog peanut, emerged June 31, July 6, USNM; MINNESOTA: no further locality, 1 ♂, mining

and webbing *Lespedeza* in August, emerged May 10, 1884, CU; NEW JERSEY: Caldwell, 5 ♀, July 8, 1900, W. D. Kearfott, USNM; Essex Co. Park, 9 ♀, June 28–July 28, W. D. Kearfott, CU, USNM; NEW YORK: Irving, 1 ♀, August 26, 1917, Wm. Wild, CU; Ithaca, 8 ♂, 1 ♀, June 6–July 26, Forbes, A. B. Klots, J. G. Franclemont, CU, ABK, JGF; Sea Cliff, 1 ♂, June, USNM; NORTH CAROLINA: Balsam, 8 ♀, July 16–22, 1911, A. F. Braun, CAS, USNM; Highlands Biological Station, Highlands, 3865 feet, 25 ♂, 3 ♀, July 11–August 8, 1958, R. W. Hodges, CU, USNM; OHIO: Cincinnati, 1 ♂, June 14, 1952, A. F. Braun, USNM; PENNSYLVANIA: New Brighton, 1 ♂, July 9, 1907, USNM; Oak Station, 1 ♀, Aug. 1, 1910, F. Marloff, USNM; Pittsburgh, 1 ♂, 3 ♀, July 19, 20, Henry Engel, USNM; TENNESSEE: Monteagle, 1 ♀, June 8, 1930, Richards, CU; UTAH: 2 ♀, CAS; VIRGINIA: Great Falls, 1 ♂, June 13, 1919, A. Busck, USNM.

Stilbosis nubila, new species

FIGURES 23, 40

Maculation: head, thorax, and forewings shining lead colored with brassy reflections at some angles of light incidence. Outer surface of labial palpus dark fuscous, inner surface buff; apical eight segments of antenna white. Forewing: with four patches of raised scales, one at one-fourth costad of fold, one slightly beyond it dorsad of fold, one starting halfway between costa and fold running to dorsal margin, and one at three-fourths costad of fold; few pale yellow scales beyond second patch of raised scales; raised scales at one-half yellow, and an oblique yellow streak running from outer patch of raised scales to costa; cilia pale fuscous. Hind wing: fuscous. Metathoracic leg: outer surface of tibia dark brown with white sub-basally, medially, and apically; apices of first, second, and third and sometimes all of fourth and fifth tarsal segments shining buff. Abdomen: greasy buff-brown dorsally, buff ventrally. Male genitalia: as in figure 23 (RWH slide 606), valva with ventral surface of sacculus sinuous, apex of valva with brush of setae. Female genitalia: as in figure 40 (RWH slide 607), ostium bursae subtriangular, two sclerotized loops anteroproximal of ostium bursae on seventh sternum, two foliate signa present. Alar expanse: 9–12 mm.

Holotype: ♂, Madera Canyon, 4880 feet, Santa Rita Mts., Ariz., Sept. 19, 1959, R. W. Hodges (RWH slide 527), Cornell Univ. type 3886.

Paratypes: Same locality as type, 5 ♂, 13 ♀, Aug. 1–Oct. 1, 1959 (RWH slides 528, 606, 607; RWH wing slide 15), CU, USNM; same locality except for elevation, 4400 feet, Pima County, 1 ♂, Oct. 10, 1959, USNM; same data as type except for elevation, 5600 feet, 1 ♂, 3 ♀, Aug. 1–Sept. 13, 1959, CU, USNM.

The major characters separating *S. nubila* from *S. tesquella* are those given in the keys.

Sorhagenia Spuler

FIGURES 4, 10, 64

Sorhagenia Spuler, 1910, Die Schmetterlinge Europas, vol. 2, p. 384.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 205 (as synonym of *Chrysoclista*).—Pierce and Metcalf, 1935, The genitalia of the tineid families of the Lepidoptera of the British Islands, p. 28.

Cystiocetes Braun, 1915, Canadian Ent., vol. 47, p. 194 (type-species: *Cystioecetes nimbosus* Braun, 1915, original designation).—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 63.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 63. New synonymy.

Type-species: *Elachista rhamniella* Zeller, 1839, monobasic.

Head: smooth-scaled; tongue moderate, scaled basally; labial palpus recurved, second segment longer than third, apex of third segment acute; maxillary palpus folded over base of tongue; antenna half length of forewing, scape three times longer than wide, slightly enlarged distally, pecten present; ocelli present. Forewing: lanceolate, patches of raised scales present; 11 or 12 veins present; 2 weak or absent, from two-thirds of cell; 3, 4, and 5 separate; 6 separate or stalked with 7 and 8; 7 and 8 stalked, 7 to costa. Hind wing: sublinear; 8 veins present; 1 weak; 2, 3, and 4 remote; base of 5 weakly present; 6 and 7 stalked. Metathoracic tibia with long scales dorsally. Male genitalia: symmetrical; valva with separate costal and saccular areas; aedeagus small in relation to entire genitalia, distal portion somewhat reduced; uncus reduced; juxta(?) present. Female genitalia: ostium bursae at posterior margin of seventh sternum; ductus bursae heavily sclerotized for length within seventh sternum, moderately heavily sclerotized for remainder of length, latter portion with series of shallow constrictions; bursa copulatrix with two signa; heavily sclerotized, medial plate extending entire length of seventh sternum; apophyses anteriores not connected by sclerotized band.

The larva of the European species, *S. rhamniella*, feeds on *Rhamnus* spp., and *S. nimbosa* has been reared on *Rhamnus*.

Sorhagenia seems to be related most closely to parts of *Aeaea* in relation to the male genitalia; also, the reduction of vein 2 in the forewing is very similar in the the two genera.

Key to North American Species of *Sorhagenia*

BASED ON MALE GENITALIA

"Juxta" somewhat thimble-shaped with depressed apex, series of more heavily sclerotized transverse bands (fig. 20) . . . . . **S. nimbosa** (Braun)

"Juxta" with hole in center, lacking sclerotized bands (fig. 21).
S. daedala, new species

BASED ON FEMALE GENITALIA

Pregenital plate narrow, constricted, appearing as attenuated triangle (fig. 44).
S. daedala, new species
Pregenital plate broad, rectangular (fig. 43) . . . . . **S. nimbosa** (Braun)

Sorhagenia nimbosa (Braun), new combination

FIGURES 20, 43, 64

Cystioecetes nimbosus Braun, 1915, Canadian Ent., vol. 47, p. 195.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 63.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 63.

Head, thorax, and forewings dark fuscous; scales tipped with pale fuscous; hind wing fuscous. Male genitalia: as in figure 20 (RWH slide 588), juxta(?) with concentric series of more heavily sclerotized bands, apex of uncus inset from basal portion. Female genitalia: as in figure 43 (RWH slide 587), pregenital plate subrectangular, heavily sclerotized ridge running from each anterolateral corner toward ostium bursae. Alar expanse: 9–12 mm.

Food plant: *Rhamnus* spp. (including *R. purshiana* D.C.). Braun (1915) gives the following on the larval habits: "The larva feeds within a large inflated gall-like chamber formed from the two halves of the leaf, which are closely appressed above, just below the margins of the leaf, and near each end. The leaf bulges between the lateral veins forming a series of pouches projecting from the large elongate chamber. The larva is pale grayish brown, with head and prothoracic shield shining pale brown. A small silken cocoon is spun, often just outside the larval habitation, where the sides of the leaf diverge, or between leaves on the bottom of the breeding jar."

Holotype: in collection of Annette F. Braun.

Type locality: Mills College, Alameda Co., Calif.

Specimens examined: CALIFORNIA: Colfax, 1 ♂, July 28, 1932, Fourness, USNM; Gold Run, 1 ♀, ex *Rhamnus californicus*, collected June 19, 1932, emerged July 19, 1932, Keifer, USNM; Mills College, 2 ♂, 2 ♀, Braun 284, emerged June 22, 24, G. R. Pilate (AB slide; RWH slides 588, 589), AFB, USNM; Oroville, 6 ♂, 2 ♀, bred from *R. californicus* July 5–26, H. H. Keifer (RWH slides 586, 587), CAS; Wiemar, Placer Co., 1 ♀, July 7, 1932, Fourness, USNM; WASHINGTON: Kent, 3 ♂, 3 ♀, reared from *Rhamnus purshiana* (Burke), USNM; Lynden, 3 ♂, 5 ♀, reared from *Rhamnus purshiana*, July 16–Aug. 28, 1934, J. B. Lauckhart (JFGC slide 3390; AB slides Oct. 14, 27, 1930; RWH wing slide 38), USNM.

***Sorhagenia daedala*, new species**

FIGURES 21, 44

Maculation: as for *S. nimbosa*. Male genitalia: as in figure 21 (RWH slide 590); juxta(?) subcircular, orifice in center; uncus very small, tapering gradually to broadly rounded apex. Female genitalia: as in figure 44 (RWH slide 591); pregenital plate very narrow, anterior arms divergent, reaching anterior margin of seventh sternum; apophyses anteriores and posteriores very slender, long. Alar expanse: 9.5–10 mm.

Holotype: ♂, Mt. Shasta City, Siskiyou Co., Calif., July 4, 1958, J. Powell (RWH slide 590, RWH wing slide 39), USNM type 66355.

Paratype: same data as type, 1 ♀ (RWH slide 591), UCB.

I have not been able to find any consistent differences in the habitus or venation which would enable me to separate *S. daedala* from *S. nimbosa;* therefore, the characters pointed out in the keys based on the genitalia should be used.

Chrysopeleia Chambers

FIGURES 5, 9, 65

Chrysopeleia Chambers, 1874, Canadian Ent., vol. 6, p. 72; 1878, Bull. U.S. Geol. Geogr. Surv. Terr., vol. 4, p. 128 (as synonym of *Aeaea*); 1879, Canadian Ent., vol. 11, p. 9 (as synonym of *Aeaea*); 1880, Psyche, vol. 3, p. 64 (as synonym of *Aeaea*).—Riley, *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 108.—Dyar, 1902 [1903], U.S. Nat. Mus. Bull. 52, p. 540.—Kearfott, *in* Smith, 1903, Check list of the Lepidoptera of boreal America, p. 118.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152.—Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem., no. 68, p. 329.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 49.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 63.

Chysopeleia, Chambers, 1874, Canadian Ent., vol. 6, p. 72 (lapsus calami).

Type-species: *Chrysopeleia purpuriella* Chambers, 1874, monobasic.

Head: smooth-scaled, labial palpus recurved, third segment shorter than second, apex acute; tongue scaled basally; maxillary palpus folded over base of tongue. Forewing: patches of raised scales; lanceolate, apex acute; 12 veins present; 1b furcate basally; 2 present at margin of wing; 3, 4, and 5 separate; 7 and 8 out of 6; 11 from three-fifths of cell. Hind wing: linear, 7 veins present, 1 absent, 6 out of 7 at three-fifths. Metathoracic tibia with long scales dorsally. Male genitalia: strongly modified, somewhat asymmetrical; valva reduced, apex turned, saccus developed as a triangle; vinculum narrow; uncus a rounded lobe; aedeagus massive, larger than other parts of genitalia, apex very acute; eighth sternum modified, lateral sclerotized section on each side with long scales (possibly assuming function of reduced valvae). Female genitalia: ostium bursae large, slightly

distad of middle of eighth sternum; ductus bursae heavily sclerotized for proximal three-fifths; corpus bursae with two signa.

Chrysopeleia purpuriella has the habitus of species of *Aeaea;* however, the male and female genitalia are very distinct from the latter, and for this reason I am treating them as separate genera. Only one species of *Chrysopeleia* is known, and it may be an offshoot from *Aeaea.*

Chrysopeleia purpuriella Chambers

FIGURES 25, 25a, 25b, 42, 65

Chrysopeleia purpuriella Chambers, 1874, Canadian Ent., vol. 6, p. 73.—Riley, *in* Smith, 1891, List of the Lepidoptera of boreal America, p. 108.—Dyar, 1902 [1903], U.S. Nat. Mus. Bull. 52, p. 540.—Kearfott, *in* Smith, 1903, Check list of the Lepidoptera of boreal America, p. 118.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 152.—Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem., no. 68, p. 329.—Fletcher, 1929, Mem. Dep. Agric. India, Ent. Ser., vol. 11, p. 49.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 63.

Aeaea purpuriella, Chambers, 1878, Bull. U.S. Geol. Geogr. Surv. Terr., vol. 4, p. 128; 1879, Canadian Ent., vol. 11, p. 9; 1880, Psyche, vol. 3, p. 64.—Hagen, 1884, Papilio, vol. 4, p. 154.

Chysopeleia [sic] *purpuriella,* Chambers, 1874, Canadian Ent., vol. 6, p. 73 (lapsus calami).

Maculation: as in figure 65; labial palpus dark fuscous-black with deep purple reflections, dorsal surface of second and third segments and apex of third segment shining pale gray; head, thorax, forewings, legs, and abdomen dark fuscous-black with deep purple reflections, most scales unicolorous; undersurface of scape of antenna shining pale gray, forewing sometimes with pale, oblique fascia starting at four-fifths, angled at fold. Hind wing: pale fuscous. Matathoracic tibia with white fascia on outer surface at middle and outer tibial spurs; apices of tarsal segments white. Male genitalia: as in figure 25 (JFGC slide 10225). Female genitalia: as in figure 42 (RWH slide 1160). Alar expanse: 6–8 mm.

Food plant: Chambers (1880) has reared one adult from *Robinia pseudo-acacia* L.; however, he did not separate the larva from those of *Lithocolletis robiniella* Clemens when the leaves were gathered. Chapman has reared the adults of *C. purpuriella* from cocoons which were attached to the smaller branches of apple; but, even though the cocoons were very abundant, no feeding larvae were found.

Holotype: Museum of Comparative Zoology.

Type locality: Kentucky.

Specimens examined: ILLINOIS: Putnam Co., 1 ♂, May 17, 1959, M. O. Glenn (RWH slide 2038), MOG. KENTUCKY: no further locality, 2 ♂, Chambers (RWH slide 871), MCZ, USNM. NEW YORK: Geneva, 2 ♂, 1 ♀, emerged March 29, 1961 (RWH slides 1657–1659), USNM; Ithaca, 1 ♀, June 25, 1931, A. B. Klots (RWH

slide 10039), ABK; Six Mile Creek, Ithaca, 2 ♂, 3 ♀, July 23, 25, 1960, R. W. Hodges (RWH slides 1157–1160, RWH wing slide 41), CU, USNM; PENNSYLVANIA: Oak Station, Allegheny Co., 1 ♂, July 11, 1907, Fred Marloff (JFGC slide 10225), USNM.

There is an additional specimen, probably *C. purpuriella*, in the USNM from Dallas, Texas; however, because the abdomen is missing, I hesitate to indicate such a large extension in range without being able to verify the identification by examination of the genitalia.

Obithome, new genus

FIGURES 1, 15, 66

Type-species: *Mompha punctiferella* Busck, 1906.

Head: smooth-scaled; labial palpus recurved, second segment longer than third, apex of third segment relatively blunt; tongue moderate, scaled basally; maxillary palpus directed ventrally and somewhat folded over base of tongue; antenna two-thirds to three-fourths length of forewing, pecten present; ocellus visible. Forewing: lanceolate; 12 veins present; cell closed; 2 from three-fourths of cell; 3 from angle of cell; 7 and 8 long-stalked; 11 from three-fifths of cell. Hind wing: sublanceolate; 8 veins present; 2, 3, 4, and 5 approximately equidistant; 6 from 7 slightly beyond two-thirds length of hind wing. Male genitalia: valvae asymmetrical, right valva longer than left; manica connecting aedeagus to vinculum parallel with aedeagus; vinculum narrow; tegumen narrow, broadened immediately before apex; uncus absent; eighth abdominal segment apparently involved with genitalia, lateral rodlike extension on each side. Female genitalia: apparently modified for piercing; apophyses anteriores and posteriores stout, heavily sclerotized; ostium bursae before middle of seventh abdominal sternum; signum present.

Obithome appears to be derived from *Ithome*. The female genitalia of the two genera are very similar, and probably both represent a modification for piercing or for placing eggs within flower buds. Female genitalic differences between the two are as follows: the apophyses anteriores are joined in *Obithome*, separate in *Ithome;* there is one signum in *Obithome*, none or two in *Ithome*. The male genitalia depart markedly from those of *Ithome*, and, in fact, it is difficult to be sure of the homologies. The eighth abdominal segment has become involved in the genital structure with two lateral lobes, which may functionally replace the valvae. Dorsally, this segment is narrow, and ventrally it is a broad lobe. These four areas form a continuous ring. The valvae are reduced and asymmetrical, the right one being longer than the left. There is a broad lobe or band, extending from valva to valva, to which I cannot apply a name. It may be a part

of the valvae. That part which seems to be the tegumen is expanded before the apex and has a series of stout setae in the expanded area. The male genitalia lack both uncus and subscaphium and have accessory valva-like processes arising from the eighth abdominal segment. *Ithome* has an uncus and subscaphium and does not have the valva-like structure.

***Obithome punctiferella* (Busck), new combination**

FIGURES 18, 39, 66

Mompha punctiferella Busck, 1906, Proc. U.S. Nat. Mus., vol. 30, p. 731.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 153.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, pt. 1, p. 65.

Head: labial palpus with inner surface buff becoming brown apically, outer surface of second segment ochreous basally, brown distally, outer surface of third segment buff basally and distally, brown medially; tongue pale gray-buff basally; face pale ochreous medially, brownish laterally; scales of occiput ochreous-brown with buff apices. Thorax and base of forewing ochreous; most of forewing buff, becoming pale brown at apex, black dots scattered on forewing, cilia fuscous. Hind wing dark fuscous. Methathoracic leg: outer surface of tibia gray-brown on basal half, ochreous on distal half, ochreous streak from base of medial spurs; tarsal segments brown, apices buff-white. Abdomen ochreous-buff. Male genitalia: as in figure 18 (RWH slide 2118). Female genitalia: as in figure 39 (RWH slide 2119). Alar expanse: 8–10.5 mm.

Lectotype: present designation, ♂, bearing following labels: "1. Victoria, 24–4, Tex. 2. H. S. Barber collector. 3. Type No. 9773, USNM. 4. *Mompha punctiferella* Busck, Type! 5. Male genitalia on slide, 1962, R.W.H. 2040." In USNM.

Specimens examined: TEXAS: Corpus Christi, 1 ♂, May 8, 1943, W. M. Gordon (RWH slide 126), CU; Richmond, Brazos River, 6 ♂, 3 ♀, June 22, 1917 (RWH slides 2118, 2119; RWH wing slide 43), CU, USNM; Victoria, 1 ♂, 1 ♀, same data as lectotype, USNM; Victoria, 2 ♂, June 24, 1917 (RWH slide 119), USNM.

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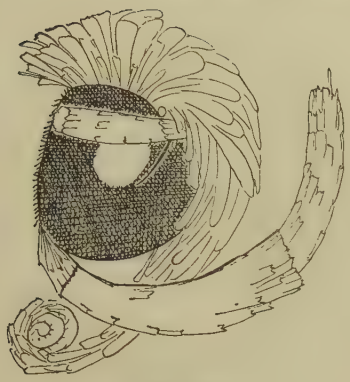
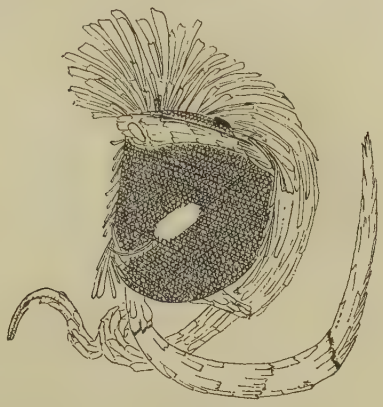


1. OBITHOME



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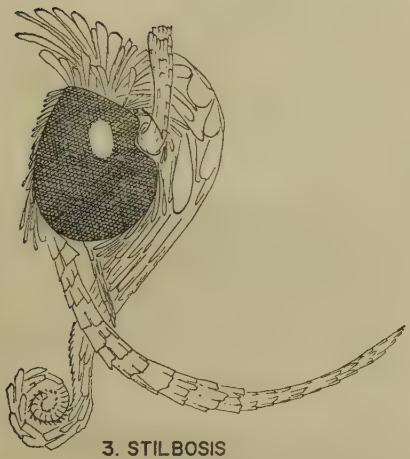

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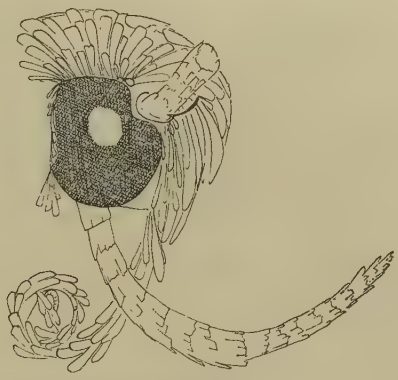
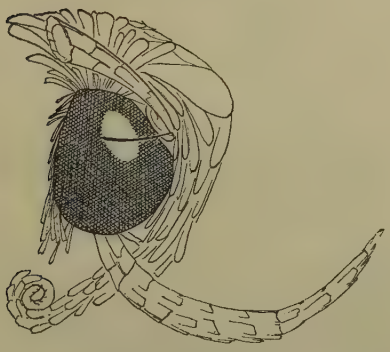
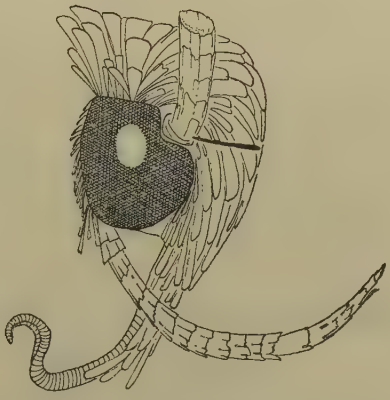


4. SORHAGENIA

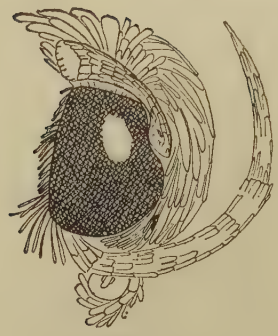


5. CHRYSOPELEIA

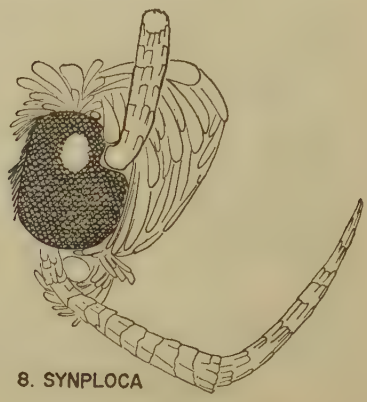


6. AEAEA

FIGURES 1–6.—Lateral view of heads of types of genera: 1, *Obithome punctiferella* (Busck); 2, *Nepotula secura*, new species; 3, *Stilbosis tesquella* Clemens; 4, *Sorhagenia rhamniella* (Zeller); 5, *Chrysopeleia purpuriella* Chambers; 6, *Aeaea ostryaeella* Chambers.



7. NEOPLOCA



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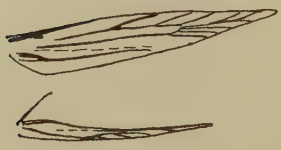
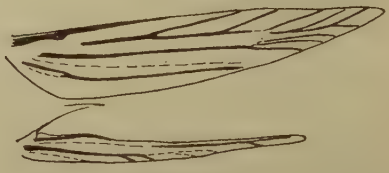


9. CHRYSOPELEIA

10. SORHAGENIA

11. NEOPLOCA

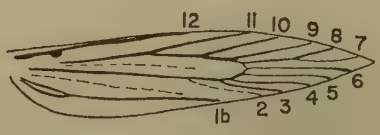


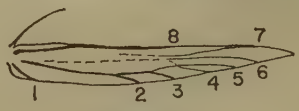
12. AEAEA

13. STILBOSIS

14. SYNPLOCA

15. OBITHOME

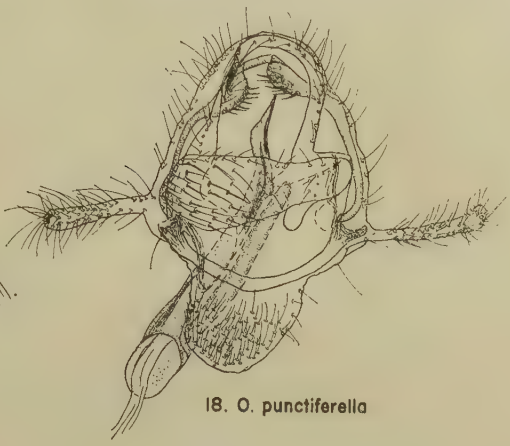




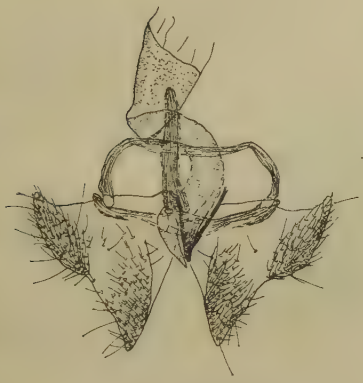
16. NEPOTULA

FIGURES 7–16.—Lateral view of heads of types of genera: 7, *Neoploca corusca*, new species; 8, *Synploca gumia*, new species. Venation of types of genera: 9, *Chrysopeleia purpurella* Chambers; 10, *Sorhagenia rhamniella* (Zeller); 11, *Neoploca corusca*, new species; 12, *Aeaea ostryaeella* Chambers; 13, *Stilbosis tesquella* Clemens; 14, *Synploca gumia*, new species; 15, *Obithome punctiferella* (Busck); 16, *Nepotula secura*, new species.

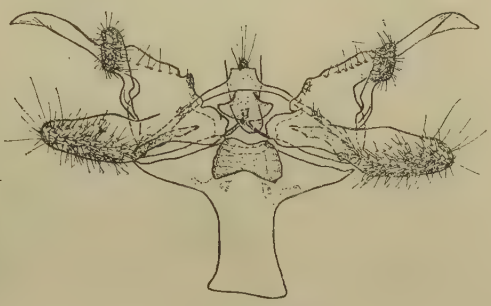
17. N. secura



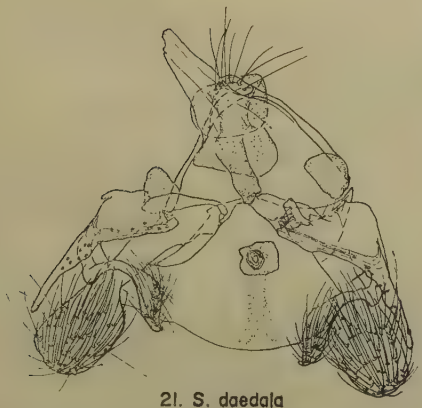
18. O. punctiferella



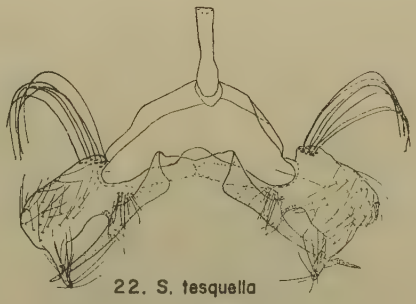
19. N. corusca



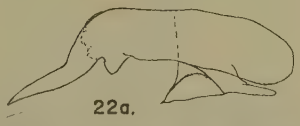
20. S. nimbosa



21. S. daedala



22. S. tesquella



22a.

FIGURES 17–22a.—Ventral view of male genitalia: 17, *Nepotula secura*, new species; 18, *Obithome punctiferella* (Busck); 19, *Neoploca corusca*, new species; 20, *Sorhagenia nimbosa* (Braun); 21, *S. daedala*, new species; 22, *Stilbosis tesquella* Clemens; 22a, *S. tesquella*, aedeagus.

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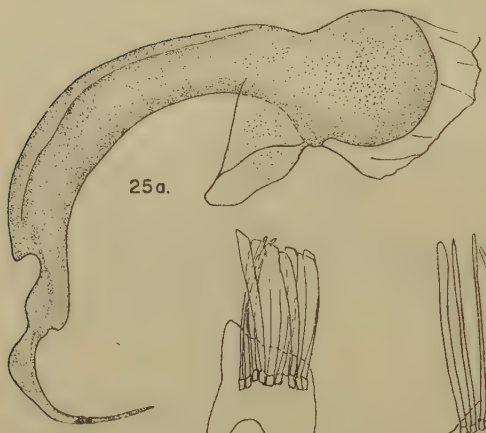
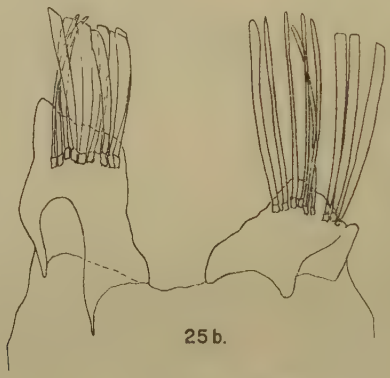
23. S. nubila

24. S. gumia



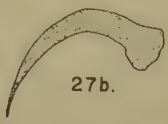
25a.

25. C. purpuriella

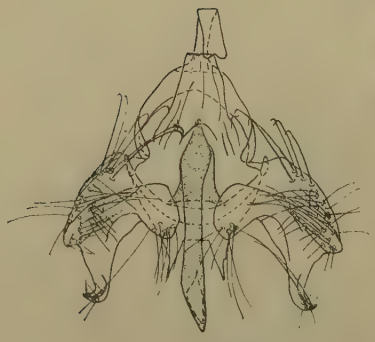


25b.

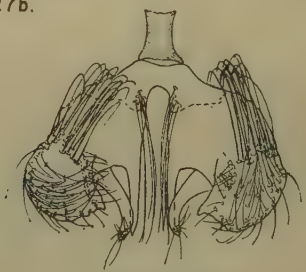
27a.



27b.



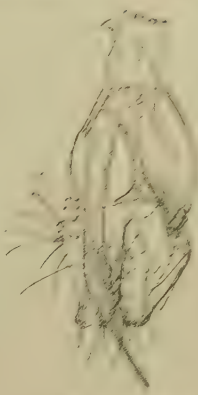
26. A. ostryaeella



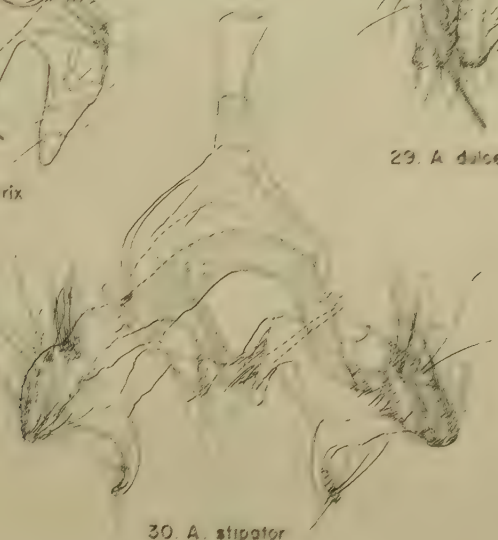
27. A. victor

FIGURES 23–27b.—Ventral view of male genitalia: 23, *Stilbosis nubila*, new species; 24, *Synploca gumia*, new species; 25, *Chrysopeleia purpuriella* Chambers; 25a, *C. purpuriella*, aedeagus; 25b, *C. purpuriella*, apex of eighth sternum; 26, *Aeaea ostryaeella* Chambers; 27, *A. victor*, new species; 27a, *A. victor*, tegumen and uncus; 27b, *A. victor*, aedeagus.

28. A. venatrix

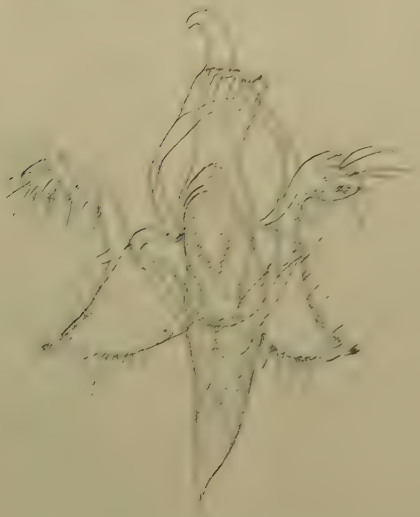


29. A. dulcedo



30. A. stipator

31. A. venifica

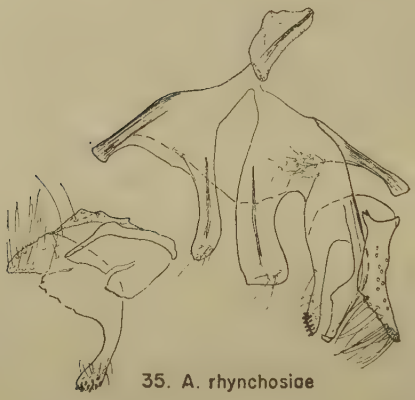


32. A. juvantis

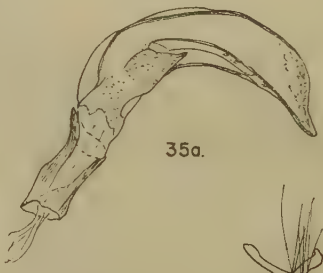
FIGURES 28–32.—Ventral view of male genitalia: 28, *Aeaea venatrix*, new species; 29, *A. dulcedo*, new species; 30, *A. stipator*, new species; 31, *A. venifica*, new species; 32, *A. juvantis*, new species.

33. A. risor

34. A. sagana

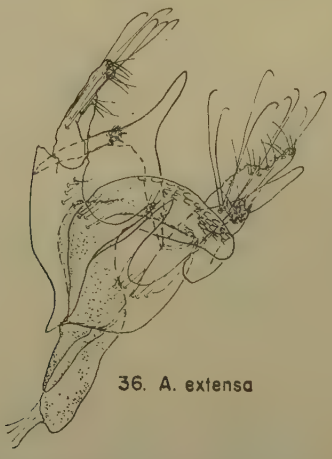


35. A. rhynchosiae



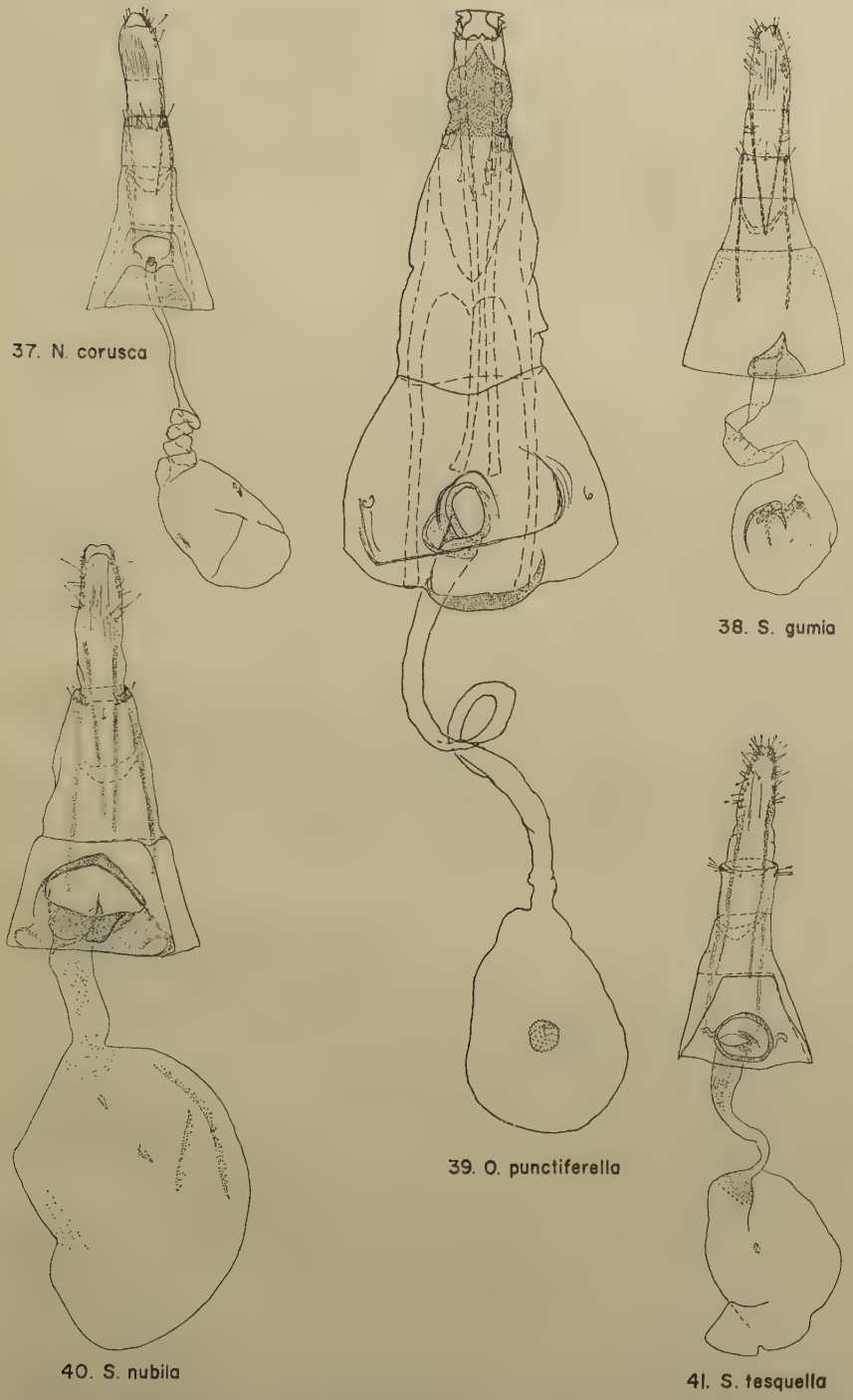
35a.

35b.

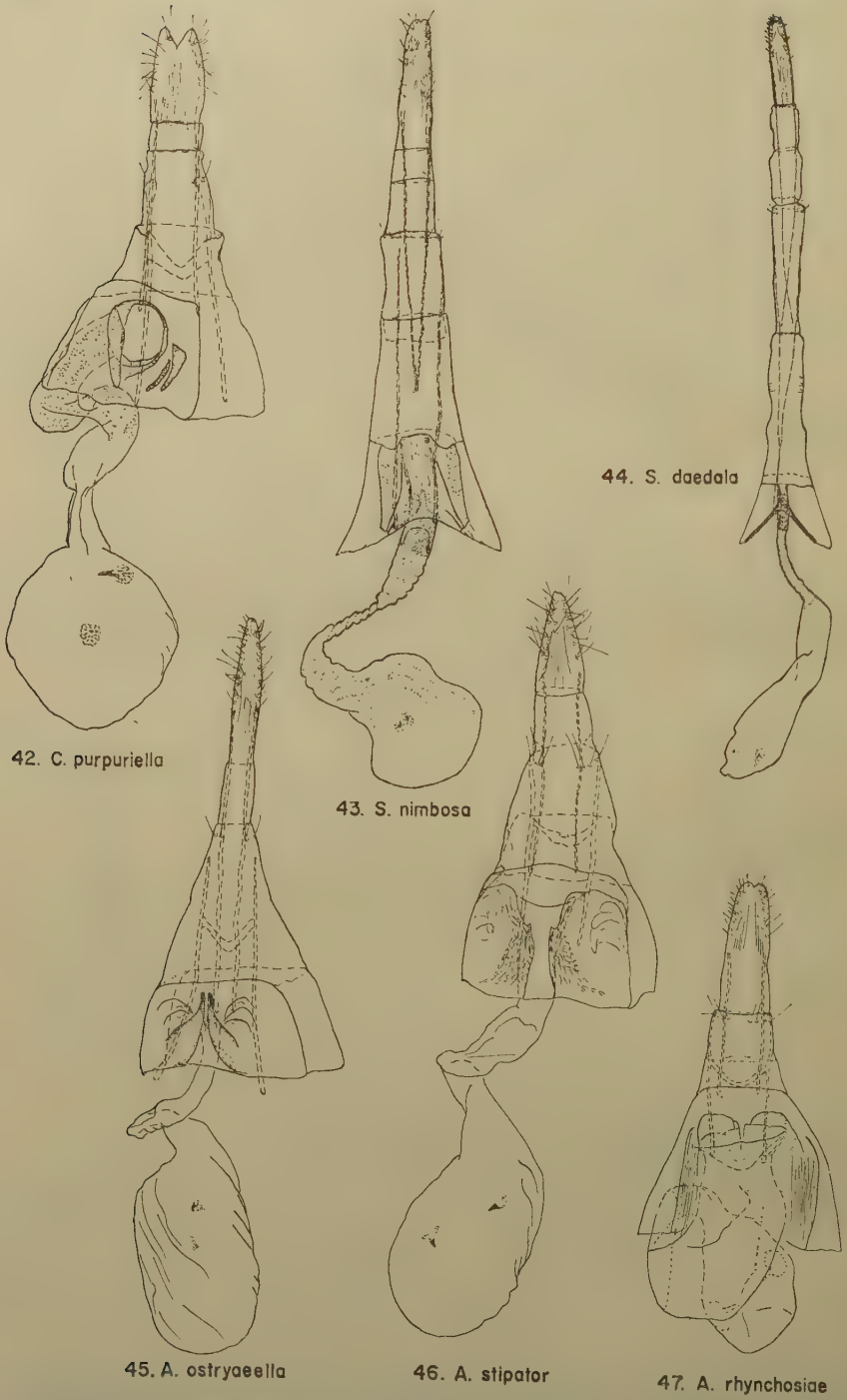


36. A. extensa

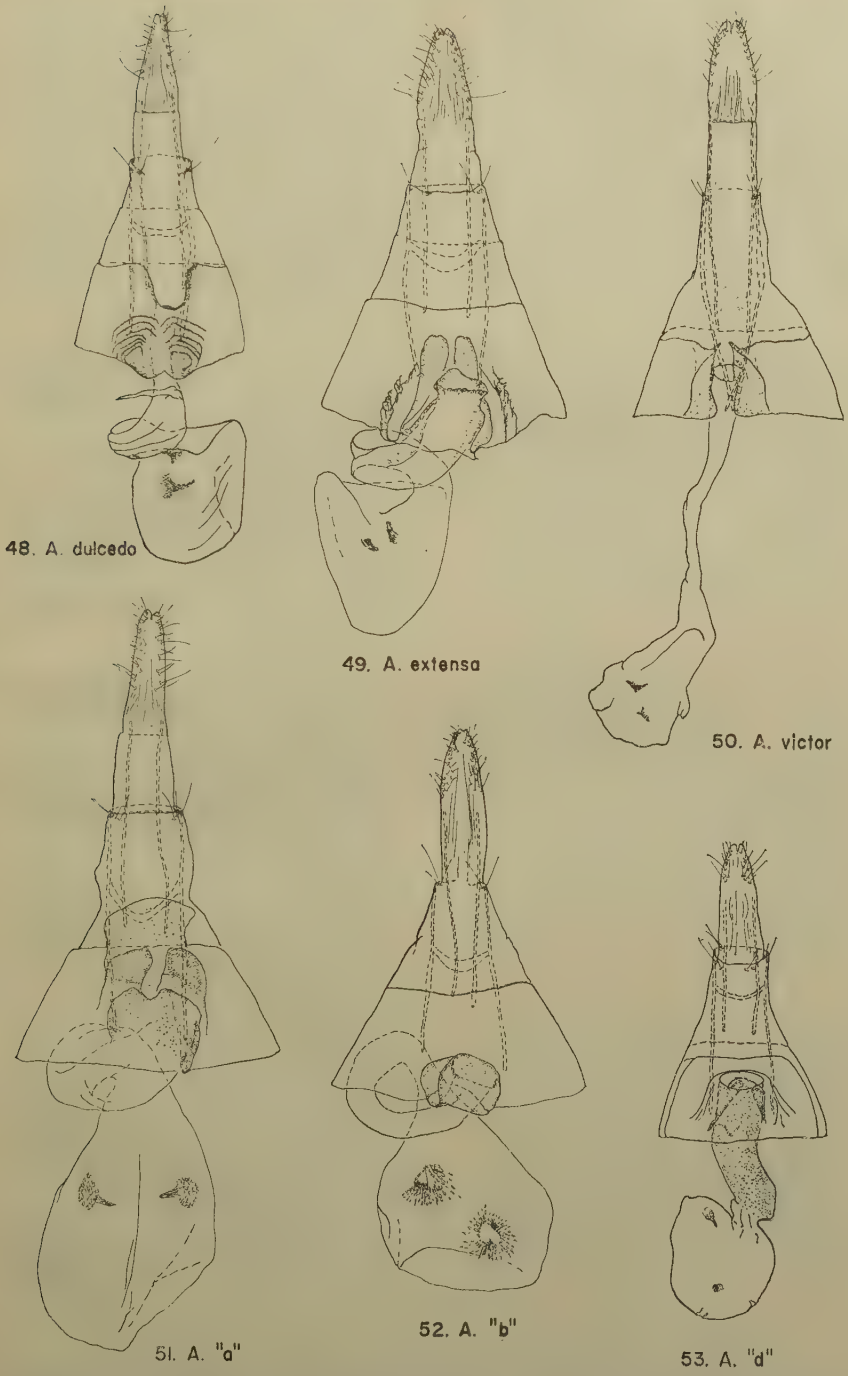
FIGURES 33–36.—Ventral view of male genitalia: 33, *Aeaea risor*, new species; 34, *A. sagana*, new species; 35, *A. rhynchosiae*, new species; 35a, *A. rhynchosiae*, aedeagus; 35b, *A. rhynchosiae*, tegumen and uncus; 36, *A. extensa* (Braun).



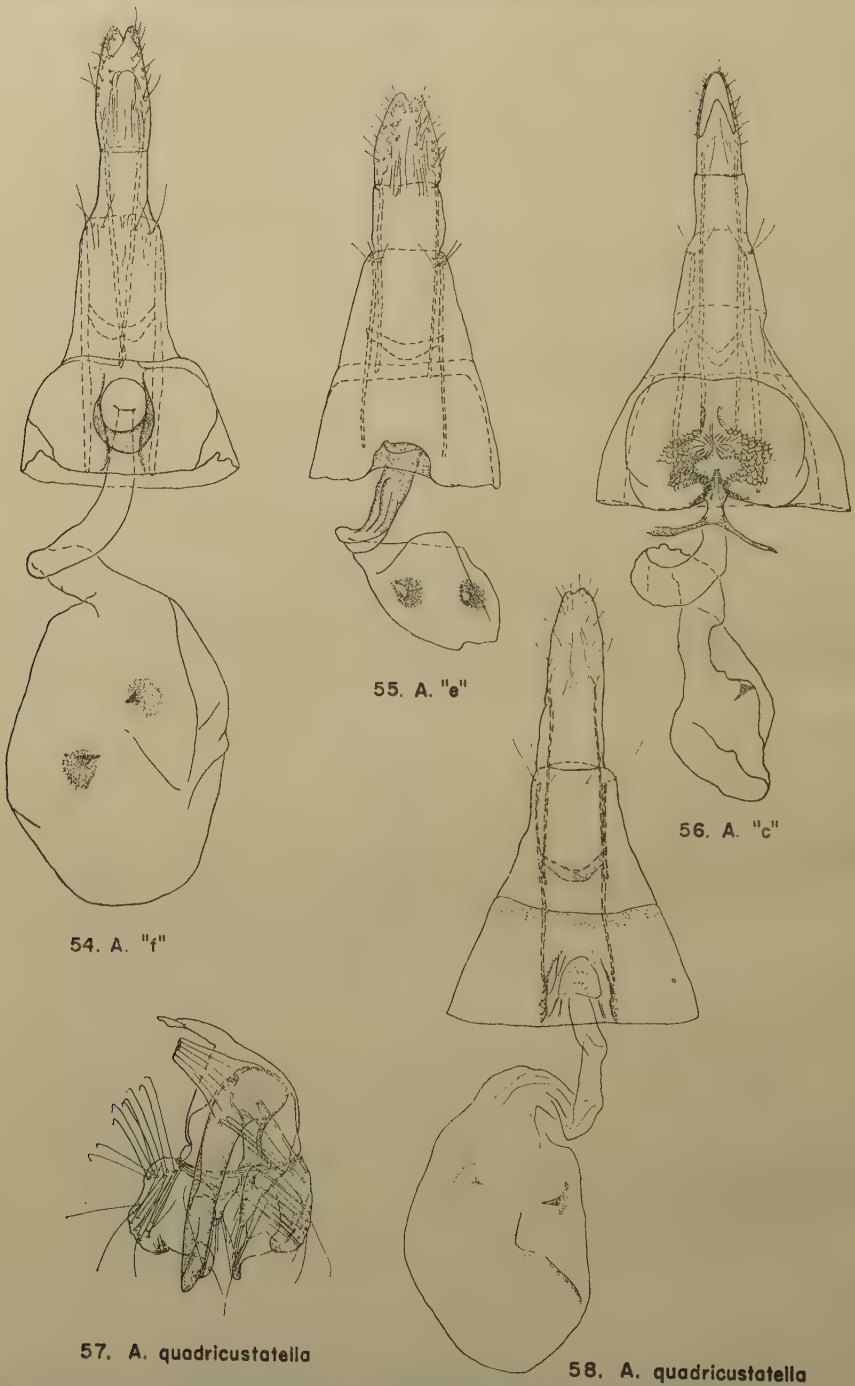
FIGURES 37–41.—Ventral view of female genitalia: 37, *Neoploca corusca*, new species; 38, *Synploca gumia*, new species; 39, *Obithome punctiferella* (Busck); 40, *Stilbosis nubila*, new species; 41, *S. tesquella* Clemens.



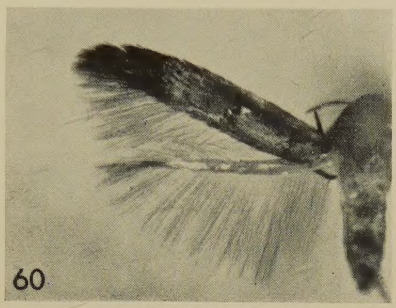
FIGURES 42–47.—Ventral view of female genitalia: 42, *Chrysopeleia purpuriella* Chambers; 43, *Sorhagenia nimbosa* (Braun); 44, *S. daedala*, new species; 45, *Aeaea ostryaeella* Chambers; 46, *A. stipator*, new species; 47, *A. rhynchosiae*, new species.

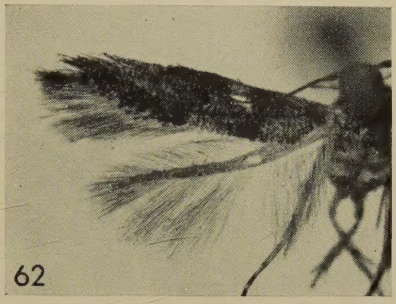


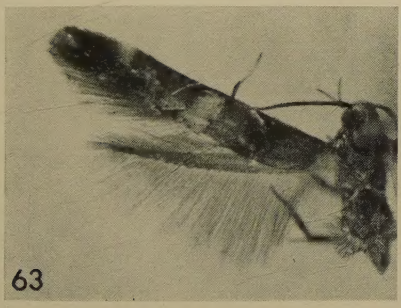
FIGURES 48–53.—Ventral view of female genitalia: 48, *Aeaea dulcedo*, new species; 49, *A. extensa* (Braun); 50, *A. victor*, new species; 51, *Aeaea* "a"; 52, *Aeaea* "b"; 53, *Aeaea* "d."

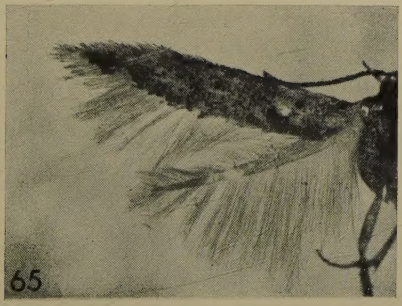


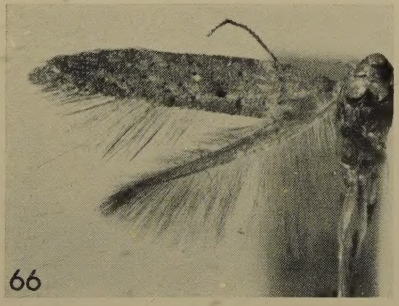
FIGURES 54–58.—Ventral view of female genitalia (except 57): 54, *Aeaea* "f"; 55, *Aeaea* "e"; 56, *Aeaea* "c"; 57, *A. quadricustatella* Chambers, male; 58, *A. quadricustatella* Chambers.











FIGURES 59–66.—Left wings of species of Walshiidae: 59, *Neoploca corusca*, new species, Peña Blanca Canyon, Santa Cruz County, Arizona; 60, *Synploca gumia*, new species, Madera Canyon, Santa Rita Mountains, Arizona; 61, *Nepotula secura*, new species, Pensacola, Florida; 62, *Aeaea* "c," Madera Canyon, Santa Rita Mountains, Arizona; 63, *Stilbosis tesquella* Clemens, West Fork, 16 miles SW Flagstaff, Arizona; 64, *Sorhagenia nimbosa* (Braun), Oroville, California; 65, *Chrysopeleia purpuriella* Chambers, Ithaca, New York; 66, *Obithome punctiferella* (Busck), Victoria, Texas.

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